NBER WORKING PAPER SERIES

CORPORATE TAX CUTS INCREASE INCOME INEQUALITY

Suresh Nallareddy
Ethan Rouen
Juan Carlos Suárez Serrato

Working Paper 24598
http://www.nber.org/papers/w24598

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
May 2018

We are especially thankful to Scott Dyreng, Dan Garrett, Andreas Peichl, Mohan Venkatachalam, and participants at the Harvard Business School brownbag for providing detailed comments. Linh Nguyen provided excellent research assistance. The views expressed herein are those of the authors and do not necessarily reflect the views of the National Bureau of Economic Research.

Corporate Tax Cuts Increase Income Inequality
Suresh Nallareddy, Ethan Rouen, and Juan Carlos Suárez Serrato
NBER Working Paper No. 24598
May 2018
JEL No. H2,H22,H25,H7,H71

ABSTRACT

This paper studies the effects of corporate tax changes on income inequality. Using state corporate tax rate changes as a setting, we show that cutting state corporate tax rates leads to increases in income inequality. This result is robust to using regression and matching approaches, and to controlling for a host of potential confounders. Contrary to the effects of tax cuts, we find no effects of tax increases on income inequality at the state level. We then use data from the IRS Statistics of Income to explore the mechanism behind the rise in income inequality. We find tax cuts lead to higher reported capital income and a decrease in wage and salary income. These effects are concentrated among top earners, and we find no effects for those reporting less than $200,000 in income. This result provides evidence that one mechanism for the relation between tax cuts and inequality is that wealthy individuals shift their income to reduce taxes while others do not. Finally, we explore the effects of corporate tax cuts on capital investment using data from the Annual Survey of Manufactures. We find that tax cuts lead to an increase in real investment, suggesting a trade-off between investment and inequality at the state level.

Suresh Nallareddy
Duke University
The Fuqua School of Business
100 Fuqua Drive
Durham, NC 27708
suresh.nallareddy@duke.edu

Ethan Rouen
Harvard Business School
383 Morgan Hall
Boston, MA 02163
erouen@hbs.edu

Juan Carlos Suárez Serrato
Department of Economics
Duke University
213 Social Sciences Building
Box 90097
Durham, NC 27708
and NBER
jc@jcsuarez.com

The question of whether corporate tax cuts benefit capital owners or workers is always at the center of debates over corporate tax reform. Proponents of the Tax Cuts and Jobs Act (TCJA) of 2017 argued that following a federal corporate tax cut from 35% to 21%, American workers would see an increase in their wages of $4,000 (CEA, 2017). Estimating the effects of taxes on inequality is challenging since the equilibrium effects of corporate tax changes rely on changes in investment decisions, factor reallocation, and the tightness of the labor market. Indeed, critics of the TCJA noted that these wage increases would only be realized if a series of effects ranging from increases in investment to wage increases took place (Clausing, 2017).

This paper informs this debate by directly estimating the causal effect of state corporate tax cuts on top income inequality. We exploit a new data series from Frank et al. (2015) who compute inequality measures at the state-year level.[1] We then use regression and matching approaches to analyze the effects of state corporate tax cuts on various measures of income inequality. A causal interpretation of these analyses relies on the assumption that the decision to cut corporate taxes is not correlated with other forces that may lead to changes in income inequality. We conduct three sets of exercises to explore the validity of this assumption. First, we show that tax cut states had similar trends in income inequality to states without tax cuts. Second, we focus our analysis on tax cuts that were not motivated by local economic conditions. To do so, we rely on the narrative analysis of Giroud and Rauh (2017) who explore the legislative process behind each state tax cut and classify tax-cut events into those that are motivated as a response to local economic conditions, and those that are likely to be exogenous from economic motivations. Finally, we use regression and matching approaches to control for potential confounders.

We find that corporate tax cuts increase income inequality over a three-year period. Focusing on the share of income accruing to the top 1%, we find that a 1 percentage point (pp.) cut in corporate taxes increases this share by 1.5pp. For comparison, the share of income accruing to the top 1% grew by 6.1pp from 1990-2010. Thus, the usual state corporate tax cut of 0.5pp would explain 12.4% of the increase to the top 1% during this time period.[2] This effect is robust to using regression and matching approaches, and to controlling for a host of potential confounders. We also find similar effects when focusing on alternative measures of inequality. In contrast, we find no effects on inequality when we study the effects of corporate tax increases.

We then study the potential mechanisms that may drive this result. First, we compare our estimate to the mechanical increase in the share to the top 1% that we would expect to find if there were no behavioral responses.[3] We find that this mechanical effect accounts for only 21% of the total increase in the share accruing to the top 1%. Second, we explore whether tax cuts were associated with changes in labor force participation and government spending, but we find no significant effects.

We then explore whether the increase in income inequality is driven by changes in top income compensation, or by increases in state-level investment. We use data from the IRS Statistics of Income to study labor and capital income at the top (income above $200,000) and bottom (below $200,000) of the income distribution. We

[1] Previous attempts at answering this question have relied on computable general equilibrium models (Kotlikoff and Summers, 1987), while more recent approaches have used spatial variation to estimate the incidence of taxes between workers and firm owners (Suárez Serrato and Zidar, 2016; Fuest et al., 2018)

[2] The average decrease in corporate tax rates across tax cut events is 0.5pp. This is also the median and modal tax change among tax cuts.

[3] While the data from Frank et al. (2015) do not account for the effect of the personal income tax system on inequality, corporate tax changes have a mechanical effect on inequality since after-tax corporate profits are then reported as income by individual taxpayers.

find no effects on the income of taxpayers in the bottom of the distribution. In contrast, we find that taxpayers in the top of the distribution see an increase in capital income of 11% and a decrease in salary and wage income of 3.5%. These effects are consistent with four mechanisms: (1) a model where managers may respond to tax cuts by extracting surplus from employers (Piketty et al., 2011), (2) a change in the compensation of capitalists who work in their businesses (Smith et al., 2017), (3) income relabeling (DeBacker et al., 2017), and (4) with corporate tax cuts spurring additional investment.[4] We test channel (4) using data from the Annual Survey of Manufacturers (1997), and we confirm that corporate tax cuts do increase capital investment in the state. However, the decrease in wage income for top earners points to a combination of channels (2) and (3), in addition to the increase in investment. These results suggest that, while corporate tax cuts increase investment, the gains from this investment are concentrated on top earners, who may also exploit additional strategies to increase the share of total income that accrues to the top 1%.

These results are related to the public finance literature on the incidence of corporate taxes. Academic economists disagree on who bears the incidence of corporate taxes (Harberger, 1962; Summers, 1989; Poterba, 1994). Recently, advocates of corporate tax cuts have argued that they are the best way to help American workers, since they presume the incidence of the tax cuts ultimately falls on labor (Kotlikoff, 2014). Clausing (2017) notes that the effect of taxes on labor income requires multiple channels, including an increase in investment and labor productivity, and for workers to capture the gains from increased productivity in the form of higher wages. Suárez Serrato and Zidar (2016) analyze the incidence of state corporate tax cuts and find that the largest gains go to business owners. Their model takes a medium-term perspective (10 years) and allows for the direct benefit of lower taxes to incentivize business relocation, and thus spur wage growth. Using data from Germany, Fuest et al. (2018) find that a substantial portion of local business taxes are passed on to workers. They analyze short-term effects, which are closer to the setting in this paper. This paper contributes to this debate by eschewing many of the mechanisms behind the equilibrium effects of corporate tax changes and by directly estimating the effects of corporate tax cuts on state-level measures of inequality.

This paper is also related to a literature on the effects of state corporate tax changes. We use variation in state-level taxes to investigate the relation between corporate taxes and income inequality for several reasons. First, unlike federal tax rate changes, which are rare and affect all firms, state-level corporate rate changes are more frequent. Second, state-level corporate tax changes affect only a subset of states, which leaves unaffected states as potential controls that can be used to estimate causal effects of tax changes. Third, there is significant cross-sectional variation in state-level corporate tax changes during our sample period. A resurgent literature has leveraged these facts to provide analyses of the effects of state taxes on firm location (Giroud and Rauh, 2017), corporate debt (Heider and Ljungqvist, 2015a), employment (Ljungqvist and Smolyansky, 2015), entrepreneurship (Curtis and Decker, 2018), tax revenues (Suárez Serrato and Zidar, 2017), investment (Ohrn, 2016), tax harmonization (Fajgelbaum et al., 2015), and income shifting (DeBacker et al., 2017), among others.

This paper is also related to a literature measuring the rise in income inequality over time (Piketty and Saez,

[4]Relabeling of wage income into capital income could help reduce taxes for several reasons: First, taxes will decline if the marginal personal tax rate is greater than the marginal capital tax rate; second, taxes will decline if personal income taxes are greater than capital income taxes (i.e., dividends and capital gains); third, by relabeling wage income into capital income, payroll taxes could be reduced.

2003). Smith et al. (2017) argue that the rise of business income accounts for most of the rise in top incomes during recent years. In particular, they find that the income of active owner-managers plays an important role in driving top income inequality. Our results on changes in top income compensation are consistent with these results. They are also consistent with Rubolino and Waldenström (2018B), which finds evidence at the country level that reductions in personal income tax progressivity increases income for top earners. In addition, our findings are related to a large literature that documents that top earners are more sensitive to taxation than other tax payers (Feenberg and Poterba, 1993; Feldstein, 1999; Slemrod, 1996; Gruber and Saez, 2002; Saez, 2004; Saez et al, 2012; Piketty et al., 2011; Rubolino and Waldenström, 2018A,B; Saez, 2017). Finally, Troiano (2017) analyzes the effects of institutional changes in the taxation of personal income on income inequality. He finds that income inequality increased following the expansion of states' capacities to tax personal income.

This paper proceeds as follows. Section 1 discusses our data sources and main variables. Section 2 discusses different channels through which changes in corporate tax rates may affect inequality. Section 3 presents our main results, and Section 4 studies the potential mechanisms behind these changes. Section 5 concludes.

1 Data

This section describes the data and variables we use in the analysis. All variables are defined in Appendix A.

1.1 Measures of Income Inequality

We obtain U.S. state-level income inequality data from the Frank-Sommeiller-Price Series for Top Income Shares (Frank, 2009, 2014; Frank et al., 2015; Sommeiller and Price, 2014). The main variables of interest are the share of total state income going to a certain top percentage of the population (e.g., the total income going to the top 1% of earners). These variables are calculated using data from the IRS Statistics of Income on adjusted gross income (before personal income taxes are paid). Pre-tax adjusted gross income includes wages, salaries, and capital income (dividends, interest, rents, royalties, and business income) (Frank, 2014). These data also include other measures of income inequality including the Gini coefficient, the Theil index, the relative mean deviation, and Atkinson's measure, which is based on a social welfare function. Our main analysis focuses on the shares of income accruing to the top 10%, 5%, 1%, etc., but we also analyze these other measures in robustness checks.

1.2 Corporate Tax Rates and Tax Changes

We use data on state-level corporate tax rates from Suárez Serrato and Zidar (2017). These data are available from 1979-2012. We merge these data with two other data sets on corporate tax changes. First, we consider the corporate tax changes described in Heider and Ljungqvist (2015b), which span from 1989-2012 and primarily identifies two types of tax changes, changes to the top corporate income tax rate and changes to tax surcharges. Second, we use data on the narrative analysis of Giroud and Rauh (2017). They analyze whether states changed corporate taxes in response to local economic conditions or if the tax changes were made in response to budgetary needs. They then classify these tax changes as exogenous if they are not related to concerns about the local

economy. Our analysis of tax cuts coincides with those in Heider and Ljungqvist (2015b) which are also classified as exogenous by Giroud and Rauh (2017).

As we discuss below, we perform analyses on data spanning our entire time period (1979-2012), as well as on a subset of the data where the variation in tax changes is cleaner. We make three restrictions on this sample. First, we restrict the control observations to include only states that did not have corporate tax changes in the six years around the changes of the treated observations. Second, we examine only the first tax cut or tax increase for each state. Finally, we avoid interactions with the 1986 Tax Reform Act. These restrictions yield a dataset on tax changes from 1990-2013.

1.3 Control Variables and Additional Outcomes

We construct several measures of local economic activity using data on Gross Domestic Product (GDP) from the Bureau of Economic Analysis (BEA). First, GDP-per-capita is the natural log of GDP scaled by total population. We also use a measure of the log output gap, which is the natural log of the relative distance of GDP per capita to its filtered value.[5] The share of GDP in finance, the size of government, and military are the natural logs of the portion of GDP attributable to each of these sectors scaled by total population. Finally, we construct a measure of spillover GDP per capita as the weighted value of the natural log of neighboring states' GDP per capita in the prior year. In addition, we use BEA measures of state-level population growth, defined as the year-over-year percent change in population.

We use data from the Bureau of Labor Statistics (BLS) on the unemployment rate and the labor force participation rate for the working age population.

We use data from the IRS Statistics of Income on the composition of income by state and income level. These data include measures of adjusted gross income, salary and wage income, and capital income (interest, dividends, businesses income, and capital gains). We use total measures of these variables and we also consider their breakdown across the income distribution. For each of these types of income we calculate the income accrued to taxpayers earning less that $200,000 per year (bottom) and to those earning more that $200,000 per year (top). While this income cutoff does not line up perfectly with the data from (Frank, 2014), these data allow us to explore different mechanisms that give rise to changes in top income inequality. These data are available beginning in 1997.

Finally, we measure capital investment at the state-industry level using data from the Annual Survey of Manufactures.

1.4 Descriptive Statistics

Our main dataset consists of 1,700 state-year observations from 1979-2012. Table 1 reports descriptive statistics for these variables. The average state-level corporate tax rate is 6.57%. While several states changed their tax rate during this time period, the average tax rate did not change considerably.

[5] This measure is calculated following Aghion et al. (2015) using an HP filter of λ equal to 6.25.

Table 1 shows that, on average, the top 10% of earners at the state level receive 40% of the income, and the top 1% of earners receive 14.6%. However, these averages mask considerable changes across time, and heterogeneity across states. Panel A in Figure 1 plots the density of the share accruing to the top 1% for 1980, 1995, and 2010. These densities are shifting rightward over time, denoting increases in the average share of income for the top 1%. Moreover, the densities become more dispersed over time with the right tail expanding considerably by 2010. Panel B of Figure 1 plots the average increase in the share of the top 1%, and breaks down this share into smaller groups. This graph shows that, on average, the top 0.01% of taxpayers capture about 5% of a states' total income. Panel A of Figure 2 shows the cross-state heterogeneity in the top 1% share in 1980. Even by 1980, several states, including Nevada, Texas, Florida, and New York, had more than 10% of their income accruing to the top 1% of taxpayers. Panel B of Figure 2 shows the increase in the share to the top 1% between 1980 and 2010. This map shows that, while several states saw double-digit increases in the share to the top 1% (California, Florida, Illinois, New York), several others saw much smaller changes in income inequality over this time period (e.g., North Carolina, Ohio, Indiana).

2 Accounting for Corporate Taxes in Income Inequality

We now present a framework to trace out how changes in corporate taxes may affect income inequality based on the model of Suárez Serrato and Zidar (2016). Consider total income in a given state s:

$$L_s \times w_s + (1 - t_s^c)\pi_s \left(w_s, \frac{\rho}{1 - t_s^c} \right) E_s S_{s,s} + \sum_{s' \neq s} (1 - t_{s'}^c)\pi_{s'} \left(w_{s'}, \frac{\rho}{1 - t_{s'}^c} \right) E_{s'} S_{s,s'}. \tag{1}$$

The first component of income in a state is labor income, which equals the average wage times the number of workers. A corporate tax cut may increase labor income if workers migrate to a state following a tax cut, or if increased demand for workers raises wages.

The second and third components are after-corporate-tax profits from business income. Since business owners pay taxes in their state of residence, business income in a given state flows from businesses in the same state, as well as in other states. Let E_s denote the number of establishments in state s and let $S_{s,s}$ denote the share of these businesses in state s that are owned by residents of state s. The second component multiplies average after-corporate-tax profits in state s, $(1 - t_s^c)\pi_s \left(w_s, \frac{\rho}{1-t_s^c} \right)$ by the share of the number of businesses owned by residents of state s, $E_s S_{s,s}$.[6] Note that, while the data from Frank et al. (2015) do not account for personal income taxes, the income reported by individuals will be mechanically affected by the corporate rate as it affects their after-corporate-tax profits. In addition, average profits are also affected by changes in the wage rate w_s as well as by changes in the cost of capital $\frac{\rho}{1-t_s^c}$.[7] Business income from this second component will increase mechanically with a corporate tax cut. Current firms may increase investment as the cost of capital decreases, and additional firms may enter the state. These forces may place upward pressure on wages, which may partially decrease π_s.

[6] Note that this simple accounting formula abstracts from the choice of whether to organize a business as a corporation or a passthrough entity. Further, we assume that all after-tax profits are paid out as dividends.

[7] We assume ρ is the cost of equity capital which is constant across states and demands a constant after-tax return.

Finally, the third term accounts for business income from businesses owned by residents of state s, but that are located in other states, $s' \neq s$.

Consider now the effect of a state corporate tax cut on total income. The following expression describes the percentage change in total income following the tax cut:

$$\text{Earnings Share}_s(\Delta L_s + \Delta w_s) + \text{Business Income Share}_s \times (1 + \Delta \pi_s + \Delta E_s)\,, \tag{2}$$

where Δ denotes a percentage change, and where we assume that out-of-state businesses are not affected by changes in other-state-taxes. As described above, workers and business owners may relocate in response to changes in corporate taxes $(\Delta L_s, \Delta S_s)$, and wages and profits may also adjust $(\Delta w_s, \Delta \pi_s)$.

This equation helps set ideas for how a corporate tax cut may affect income inequality. Assume, for instance, that all businesses are owned by top-income taxpayers. A corporate tax cut may reduce inequality if the tax cut leads to additional labor demand, which boosts labor income, while entry of new businesses competes away the mechanical increase in after-corporate-tax profits, as well as the reduction in the cost of capital. For instance, Suárez Serrato and Zidar (2016) find large elasticities of firm location with respect to the business tax rate, ΔE_s. Alternatively, a corporate tax cut may increase inequality if wage income does not rise as much as the direct and indirect effects of profits on capital income.

One specific hypothesis is that a corporate tax cut only has direct effects on income, so that behavioral and wage effects can be ignored. If this were the case, and if tax payers in the top 1% own all businesses, we would expect that the share of income for the top 1% would increase by the Business Income Share$_s$. In practice, we can use the share of business income to taxpayers earning above $200,000 as an estimate for the share of capital income accruing to top earners. This is a useful reference point for our empirical analysis. In addition, note that worker migration and wage increases would push the effect on the share to the top 1% to be below this number. In contrast, if business formation and additional investment provide additional income to top earners, we would expect to find a larger increase on top income inequality.

This simple framework ignores important mechanisms that may also affect income inequality. For instance, active owner-managers can choose whether to receive compensation in the form of labor or capital income. As shown in Smith et al. (2017), business income of this sort may be a large driver of recent increases in income inequality. A corporate tax cut may then incentivize owner-managers to shift their compensation from labor to capital income. This would lead to a larger increase in inequality than that prescribed by the mechanical effect above.

3 Corporate Taxes and Income Inequality

This section presents our main results. We first explore the effects of corporate taxes on inequality using a simple difference-in-differences analysis. We complement these results with a matching approach, where we analyze the effects of tax cuts and tax increases.

3.1 A Difference-in-Differences Analysis

We start our analysis of the effects of corporate taxes on inequality by estimating the following regression:

$$\text{Income Inequality}_{st} = \alpha_s + \gamma_t + \beta\tau_{st}^c + \Psi X_{st} + \varepsilon_{st}, \tag{3}$$

where Income Inequality$_{st}$ is the share of income that accrues to the top x% of the income distribution. α_s and γ_t are state and year fixed effects that capture permanent differences in inequality across states, as well as common time trends. X_{st} is a vector of controls that includes GDP per capita; population growth; the natural log of the output gap; the share of GDP in the finance, government, and military; a measure of spillover in GDP from neighboring states; and the unemployment rate. In order to interpret the coefficient β as the causal effect of the corporate tax rate τ_{st}^c on our measures of inequality, we make the assumption that changes in tax rates are independent of other drivers of inequality ε_{st} that are omitted from the regression. We allow ε_{st} to be clustered at the state level.

Table 2 documents the relation between tax rates and income inequality in our full sample. The first six columns report estimates of β for various measures of top income inequality without controlling for the covariates in X_{st}. These estimates are all negative and statistically significant. We find that a tax cut of 1pp increases the income share of the top 10% by 0.67pp, and to the top 1% by 0.59pp. These effects are monotonically ordered since finer measures of the top tail of the income distribution are a subset of the income share of the top 10%. This implies that about 87% $\left(\approx \frac{0.59}{0.67}\right)$ of the increased concentration in the top 10% is due to the top 1%. Moreover, 34% $\left(\approx \frac{0.23}{0.67}\right)$ of this effect is concentrated in the top 0.01%.

In columns (6)-(12) we explore whether controlling for the covariates in X_{st} affects these estimates. If states with higher growth in GDP per capita or with a higher share of GDP in finance experienced a faster rise in income inequality, we would expect that controlling for these confounders would attenuate our results. We find that controlling for these covariates has a very small effect on our estimates. In particular, the conclusion that corporate tax cuts increase income inequality is robust to including these potential confounders.

3.2 A Matching Approach

We now take a matching approach to estimating the effects of state corporate tax changes on income inequality. This approach has the benefit that it clarifies which states are used as controls in our counterfactual comparisons. In particular, while the analysis in the previous section uses all other states as controls for states with tax changes, this approach allows us to select control states from states without recent tax changes, that are geographically proximate, and that have similar economic characteristics.

We analyze the effects of tax cuts and tax increases separately. For each event, we categorize a state as treated during the six years around its first corporate tax change. That is, each state with a tax cut can only be a treatment state once, and is considered "treated" from year t-3 to year t+3, where year t is the year of the initial tax cut. We identify the pool of potential control states as states in the same years as the treated states, that are in the same Census division, and that had no tax changes from years t-3 to t+3. Within these eligible controls, we find a match for each treated state by comparing the propensity score of the likelihood that a state had a tax change.

We use the following logistic model to estimate the propensity score of the likelihood that a state had a tax change:

$$\log\left(\frac{\mathbb{P}r(\text{Tax Change}_{st})}{1-\mathbb{P}r(\text{Tax Change}_{st})}\right)=\alpha_s+\sum_{i=1,\ldots,3}\left(\Psi_i X_{s,t-i}+\sum_{j\in\{10,5,1,0.5,0.1,0.01\}}\beta_i^j \text{Top}_{s,t-i}^j\right),$$

where α_s are state fixed effects, and where we include three lags of the covariates in X_{st}. The last summation notes that we also use lags in our measures of top income inequality in estimating the propensity score. Lastly, we match each treatment state with the control state in the same geographic division with the most similar propensity score.

Figure 3 shows that this matching procedure is successful at balancing the covariates across treatment and control groups. This figure plots the difference in means between treated and controls states for years t-3 to t-1 normalized by the overall mean of each variable. The figure also plots 95% confidence intervals that show all of these differences are statistically insignificant at the 5%-level. Table A.1 in Appendix C reports the t-tests of the differences in means and provides further support that the covariates are balanced.

3.3 The Impacts of Corporate Tax Cuts on Income Inequality

We now estimate the effect of a corporate tax cut on our matched sample using the following regression:

$$\text{Income Inequality}_{st}=\alpha_s+\gamma_t+\beta\text{Post}_{st}\times\text{Tax Cut}_{st}+\Psi X_{st}+\varepsilon_{st}. \tag{4}$$

The controls in this equation are the same as those in Equation 3 and we again allow ε_{st} to be clustered at the state level.[8] The coefficient of interest is now β, which measures the average effect of a tax cut on income inequality. There are 25 states that had at least one tax cut from 1991-2010. We drop the year in which the tax cut occurred, leaving a sample size of 300 state-years.[9] In this sample, the average tax cut is a decrease of 0.5pp in the state corporate tax rate. This is also the median and the mode of the distribution of tax cuts in the sample.

Table 3 reports estimates of Equation 4 for the matched tax-cut sample. For all measures of income inequality, the coefficient on Post X Tax Cut is positive and significant. For example, column (1) reports that a corporate tax cut increases the share of income to the top 10% by almost 0.94pp, and to the top 1% by 0.76pp. This again implies that most of the effect is concentrated at the top of the income distribution with 80% $\left(\approx\frac{0.76}{0.94}\right)$ of the increase in top 10% concentration accruing to the top 1% and 34% $\left(\approx\frac{0.32}{0.94}\right)$ to the top 0.01%. Columns (7)-(12) show that these relations also hold when including potential confounding factors in X_{st}, providing robust evidence that state-level corporate tax cuts result in increased income inequality.

To gauge the magnitude of these coefficients, recall that the average tax cut reduced the corporate tax rate by 0.5pp. These results imply larger effects than those of Table 2. According to Table 2, a 1pp tax cut would increase the share to the top 1% by 0.59pp, while Table 3 suggests an increase of 1.52pp. The difference in these effects is due to asymmetric effect of tax cuts and tax increases. If tax increases have no effect on top income

[8] The following results are also robust to including controls for state-level personal tax cuts during the sample period.

[9] The tax change data begin in 1988 and end in 2013, and we require three years of tax-change data before and after each change, so the tax change sample is constrained to the period 1991-2010.

inequality, the regression estimates from Table 2 would average out a zero effect with the effect from Table 3. We explore the effects of tax increases in the next section and show that this explains the difference in effects across these estimation approaches.

As discussed in Section 1.4, states have seen an increase in income inequality over our sample period. On average, the share of income to the top 1% increases by 6.1pp between 1990 and 2010. This implies that the average tax cut would explain about 12.4% $\left(\approx \frac{0.76}{6.1}\right)$ of the increase in top income inequality over this period, which is an economically significant effect.

To further examine how tax cuts impact income inequality over time, we examine year-by-year changes in income inequality around tax cuts using the matched sample. Examining these dynamic effects provides additional evidence that alleviate any potential concerns related to the confounding factors or time-series patterns. To estimate the dynamic effects of tax cuts on income inequality, we create indicator variables for each year around a tax cut. These variables are equal to 1 for the treated state and 0 for the control state. We regress these variables on the measures of income inequality with and without controls and plot the coefficients in Figure 4.[10] Figure 4 shows that states with tax cuts had similar pre-trends to the control states, since none of the effects prior to the tax cut are statistically significant. In contrast, we see an increase in all of the measures of top income inequality in years t+1 to t+3. The timing of these results confirms the hypothesis that corporate tax cuts increase top income inequality.

One potential concern when analyzing effects with few treated observations is that the estimated effects are due to some form of spurious correlation. We conduct a placebo test for each measure of income inequality to allay this concern. The tests consist of assigning a random non-tax-cut year to each treated state and treating that year as if it were the actual year in which the state had its first tax cut. We then match this state-year with a control state using the methodology described in Section 3.2, and estimate Equation 3.2 using this placebo tax cut year. We run this simulation 1,000 times for each coefficient and present the cumulative distribution functions (CDFs) of the coefficient values in Figure 6. The vertical line identifies where the actual coefficient values from Table 3 (Columns (7) - (12)) fall within the distributions. For all measures of income inequality, the values of the coefficients fall outside the extreme right tails, meaning that the probability of randomly receiving coefficient values equal to those in Table 3 is less than 0.1%.[11]

3.4 Corporate Tax Increases and Income Inequality

While the previous section provides convincing evidence that corporate tax cuts lead to greater income inequality, the evidence of a relation between inequality and corporate tax increases is far less convincing. We conduct the same matching analysis as described above, except for tax increases. The matched sample consists of the 22 states that had at least one tax increase during the sample period as well as their control state.

Table 4 presents estimates of a version of Equation 4 for tax increases. Not only are the coefficients on the variables of interest (Post X Tax Increase) in Table 4 insignificant, but they are also directionally inconsistent for

[10] Table A.3 in Appendix C reports the full regression results used to create the coefficients.
[11] In Figure A.3 in Appendix B, we report the probability density functions of the coefficients.

different measures of inequality. Figure 5 also reports null effects across time. For completeness, we report the distribution of the coefficients from the placebo tests in Figure 7.[12]

4 Alternative Mechanisms Linking Tax Cuts to Inequality

The previous section provides robust evidence that state corporate tax cuts increase income inequality. This section explores different mechanisms that may give rise to this increase in inequality including how tax cuts may affect state spending, labor market conditions, investment, and the form of compensation across the income distribution.[13]

Before we explore these mechanisms, we first consider whether the effects estimated in the previous section could be due to mechanical changes. As discussed in Section 2, while the data from Frank et al. (2015) compute income shares before personal income taxes are taken into account, state corporate taxes can have a mechanical effect on top income inequality. Consider the case where a corporate tax cut has no effect on the location of firms, workers, wages, or investment. From IRS data, we observe that, on average, 32% of capital income accrues to top earners. This implies that a 0.5pp tax cut would mechanically increase the top 1% share by about 0.16pp. However, this is only about 20% $\left(\approx \frac{0.16}{0.76}\right)$ of our effect. Note also that this is an upper bound on the increase we would expect if wages and employment increased as a consequence of a corporate tax cut. Other mechanisms, such as changes in the form of compensation of owner-managers or returns to investment that accrue to top earners would result in a larger increase in inequality.

4.1 Government Spending and the Labor Market

One mechanism that may link corporate tax cuts and inequality is related to government spending. If corporate tax cuts lead to a decrease in government spending and this leads to worsened labor market outcomes, we might expect to see a decrease in income for low income individuals, which would contribute to an increase in income inequality. We examine this conjecture in Table 5 by examining whether states that cut corporate taxes see a change in government size or labor force participation compared to the matched sample of control states. The tests in these tables are similar to those described in Equation 4, except that the dependent variables are government size in columns (1) and (2), and labor force participation in columns (3) and (4). For both dependent variables, the coefficient on Post X Tax Cut is insignificant, suggesting that states that cut corporate taxes see no meaningful change in government size or workforce participation compared to states that do not cut taxes. These results are also shown graphically in Panels A and B of Figure 8.

4.2 Effects on Industry-level Investment

We now examine whether lower corporate tax rates lead to increased private-sector investment. A justification for tax cuts is that companies will be encouraged to invest because the value of potential projects is increased through

[12] Appendix C reports the results of the regressions used to calculate the coefficients in Figure 5 in Table A.4 and the PDFs of the placebo coefficients in Figure A.4.

[13] For completeness, we conduct the same analysis for the tax increase sample and report the results in the Appendix.

lower (tax) costs. We explore this hypothesis using data at the industry-state level from the Annual Survey of Manufactures. Table 5 provides evidence in support of this conjecture by providing estimates of Equation 4 where the outcome is log investment at the state-year level. This table shows that investment increases by 14-16% following a tax cut. Panel C of Figure 8 plots the binned data and estimated regression. Compared to the average tax cut, this effect implies a semi-elasticity of investment to the corporate tax of 3, which is in the range of estimates from the literature (de Mooij and Ederveen, 2008), and from recent studies of the effects of bonus depreciation on investment (Zwick and Mahon, 2017; Ohrn, 2016).

4.3 Changes in the Form of Compensation

One possible explanation for the increase in income inequality following a corporate tax cut is that top earners shift their taxable income from wages to capital income in order to take advantage of lower tax rates (Rubolino and Waldenström, 2018A). Table 6 examines whether corporate tax cuts result in income shifting among individual tax payers. As described in Section 1.3, Statistics of Income data from the IRS are available beginning in 1997, which further reduces the sample size to 84 state-year observations. In Table 6, we use the fact that these outcomes are related to each other and estimate a seemingly unrelated regression model of Equation 3.2 for these outcomes. This procedure increases the efficiency of the statistical inference.

Columns (1)-(3) examine the impact of corporate tax cuts on adjusted gross income (AGI). While those earning under $200,000 per year have no significant change in their income following a tax cut, AGI increases by 3.5% for those that earn more than $200,000. Total AGI increases by 1.5% after a tax cut. Columns (4)-(6) report the relation between tax cuts and reported taxable income attributable to salary and wages. We find top earners have lower salary and wage income by 3.5%, but we see no effect on bottom earners or on total wage compensation at the state level. Finally, columns (7)-(9) report the effects on the ratio of salary to capital income, and we see a decrease for those making more than $200,000 following a tax cut.

These results suggest that top earners respond to corporate tax cuts by shifting taxable income into capital to take advantage of the lower rate, while those making less than $200,000 do not have a similar response.

4.4 Robustness to Alternative Measures of Inequality

To ensure that our results are robust to how income inequality is measured, we examine the relation between tax cuts and alternative measures of income inequality (the relative mean deviation, Gini coefficient, Atkinson index, and Theil's entropy index).[14] Table 7 reports the result of a seemingly unrelated regression of Equation 4 on these outcomes. Consistent with prior results, the coefficients on all measures of inequality are positive and statistically significant. These results are robust to including potential confounders. In Table A.5 in Appendix C, we also report the results of dynamic analyses, where we allow the effect of the tax cut to vary across relative years. Overall, these outcomes also show that corporate tax cuts increase income inequality.

[14] For completeness, we conduct identical analysis for the tax increase sample and report the results in Appendix C.

5 Conclusions

Corporate tax cuts increase top income inequality. We document this fact using regression and matching techniques. Relative to the recent trends, we find that a state corporate tax cut of 0.5pp would explain about 12.4% of the average rise in the share of income accruing to the top 1% between 1990 and 2010.

We show that the size of the effect is greater than that implied by a mechanical increase in after-tax income to business owners. This suggests that, over this short time period, workers are not benefiting from state corporate tax cuts. Moreover, we find that top income taxpayers benefit from the returns of additional investment as well as by shifting income from salary and wages to capital income.

These results are consistent with those of Suárez Serrato and Zidar (2016) and further illuminate the mechanisms through which corporate tax cuts affect the local economy. In the model of Suárez Serrato and Zidar (2016), wages rise as lower corporate taxes encourage business formation, which then increases the demand for labor. Since the results of this paper focus on short-term effects, it may be the case that these effects may be partially reversed over the medium term. Note, however, that the benefits to existing owners are front-loaded, while the benefits to workers are back-loaded and only materialize after competitive forces drive down after-tax profits. This clarifies that attempts to use corporate tax cuts as a means to boost the local economy depend on increases in top income inequality to generate additional economic activity. In contrast, other approaches such as government spending at the local level (e.g., Suárez Serrato and Wingender (2011)) or tax cuts to low-income earners (e.g., Zidar (2015)) may stimulate the economy without increasing inequality.

References

Aghion, Philippe, Ufuk Akcigit, Antonin Bergeaud, Richard Blundell, and David Hémous, "Innovation and Top Income Inequality," *NBER Working Paper Series No. 21247*, 2015.

Annual Survey of Manufacturers, "Report Series (Volume 1)," November 1997.

CEA, "The Growth Effects of Corporate Tax Reform and Implications for Wages," Report (Accessed 2 September 2011), The Council of Economic Advisers 2017.

Clausing, Kimberly, "Would Cutting Corporate Taxes Raise Workers' Incomes?," *EconoFact*, 2017.

Curtis, E. Mark and Ryan A. Decker, "Entrepreneurship and State Taxation," *Federal Reserve Board Divisions of Research & Statistics and Monetary Affairs, Finance and Economics Discussion Series*, 2018.

de Mooij, Ruud A. and Sjef Ederveen, "Corporate tax elasticities: a reader's guide to empirical findings," *Oxford Review of Economic Policy*, winter 2008, *24* (4), 680–697.

DeBacker, Jason, Bradley T. Heim, Justin M. Ross, and Shanthi P. Ramnath, "The Impact of State Taxes on Pass-Through Businesses: Evidence from the 2012 Kansas Income Tax Reform," 2017.

Fajgelbaum, Pablo D., Eduardo Morales, Juan Carlos Suárez Serrato, and Owen M. Zidar, "State Taxes and Spatial Misallocation," Working Paper 21760, National Bureau of Economic Research November 2015.

Feenberg, Daniel and James Poterba, "Income inequality and the incomes of very high-income taxpayers: evidence from tax returns," in James Poterba, ed., *Tax Policy and the Economy*, Vol. 7, 1993, 145–177.

Feldstein, Martin, "Tax Avoidance and the Deadweight Loss of the Income Tax," *The Review of Economics and Statistics*, 1999, *81* (4), 674–680.

Frank, Mark W., "Inequality and growth in the United States: Evidence from a new state-level panel of income inequality measures," *Economic Inquiry*, 2009, *47* (1), 55–68.

_ , "A New State-Level Panel of Annual Inequality Measures over the Period 1916 - 2005," *Journal of Business Strategies*, 2014, *31* (1), 241–263.

_ **, Estelle Sommeiller, Mark Price, and Emmanuel Saez**, "Frank-Sommeiller-Price Series for Top Income Shares by US States since 1917," Technical Report, Sam Houston State University 2015.

Fuest, Clemens, Andreas Peichl, and Sebastian Siegloch, "Do Higher Corporate Taxes Reduce Wages? Micro Evidence from Germany.," *American Economic Review*, 2018, *108* (2), 393–418.

Giroud, Xavier and Joshua D. Rauh, "State Taxation and the Reallocation of Business Activity: Evidence from Establishment-Level Data," Paper No. CES-WP-17-02, US Census Bureau Center for Economic Studies 2017.

Gruber, Jon and Emmanuel Saez ., "The elasticity of taxable income: evidence and implications," *Journal of Public Economics*, 2002, *84* (1), pp. 1–32.

Harberger, Arnold C., "The Incidence of the Corporation Income Tax," *Journal of Political Economy*, 1962, *70* (3), 215–240.

Heider, Florian and Alexander Ljungqvist, "As Certain as Debt and Taxes: Estimating the Tax Sensitivity of Leverage from Exogenous State Tax Changes," *Journal of Financial Economics*, 2015, *118* (3), 684–712.

_ and _ , "As certain as debt and taxes: Estimating the tax sensitivity of leverage from state tax changes," *Journal of Financial Economics*, 2015, *118*, 684–712.

Kotlikoff, Laurence J., "Abolish the Corporate Income Tax," 2014.

_ and Lawrence H. Summers, "Tax Incidence," in Alan J. Auerbach and Martin Feldstein, eds., *Handbook of Public Economics*, Vol. 2, Elsevier, 1987, chapter 16.

Ljungqvist, Alexander and Michael Smolyansky, "To Cut or Not to Cut? On the Impact of Corporate Taxes on Employment and Income," Discussion Paper 2016-006, Divisions of Research & Statistics and Monetary Affairs, Federal Reserve Board, Washington, D.C. December 2015.

Ohrn, Eric, "Investment and Employment Responses to State Adoption of Federal Accelerated Depreciation Policies," Technical Report, Grinnell College 2016.

Piketty, Thomas and Emmanuel Saez, "Income Inequality in the United States, 1913-1998," *The Quarterly Journal of Economics*, 2003, *118* (1), 1–39.

_ , _ , and Stefanie Stantcheva, "Optimal Taxation of Top Labor Incomes: A Tale of Three Elasticities," *NBER Working Paper Series No. 17616*, 2011.

Poterba, James M., "State Responses to Fiscal Crises: The Effects of Budgetary Institutions and Politics," *Journal of Political Economy*, 1994, *102* (4), pp. 799–821.

Rubolino, Enrico and Daniel Waldenström, "Trends and Gradients in Top Tax Elasticities: Cross-Country Evidence, 1900-2014," Working Paper, University of Essex and Paris School of Economics 2018A.

Rubolino, Enrico and Daniel Waldenström, "Tax Progressivity and Top Incomes: Evidence from Tax Refoms," Working Paper, University of Essex and Paris School of Economics 2018B.

Saez, Emmanuel, "Reported incomes and marginal tax rates, 1960-2000: evidence and policy implications," *Tax Policy and the Economy*, 2004, *18*, pp. 117–174.

Saez, Emmanuel, "Taxing the rich more: Preliminary evidence from the 2013 Tax Increase," *NBER Working Paper Series No. 22798*, 2017.

Saez, Emmanuel, Joel Slemrod, and Seth Giertz, "The elasticity of taxable income with respect to marginal tax rates: A critical review," *Journal of Economic Literature*, 2012, *50* (1), pp. 3–50.

Joel Slemrod, "High income families and the tax changes of the 1980s: the anatomy of behavioral response," in Martin Feldstein and James Poterba, eds., *Empirical Foundations of Household Taxation*, University of Chicago.

Smith, Matthew, Danny Yagan, Owen Zidar, and Eric Zwick, "Capitalists in the Twenty-First Century," 2017.

Smith, Matthew, Danny Yagan, Owen Zidar, and Eric Zwick, "Capitalists in the Twenty-First Century," 2017.

Sommeiller, Estelle and Mark Price, "The Increasingly Unequal States of America: Income Inequality by State, 1917 to 2011," 2014.

Suárez Serrato, Juan Carlos and Owen M. Zidar, "Who Benefits from State Corporate Tax Cuts? A Local Labor Markets Approach with Heterogeneous Firms," *American Economic Review*, 2016, *106* (9), 2582–2624.

_ and _ , "The Structure of State Corporate Taxation and Its Impact on State Tax Revenues and Economic Activity," *NBER Working Paper Series No. 23653*, 2017.

_ and Philippe Wingender, "Estimating the Incidence of Government Spending," Working Paper, U.C. Berkeley and International Monetary Fund November 2011.

Summers, Lawrence H., "Some Simple Economics of Mandated Benefits," *The American Economic Review*, 1989, *79* (2), pp. 177–183.

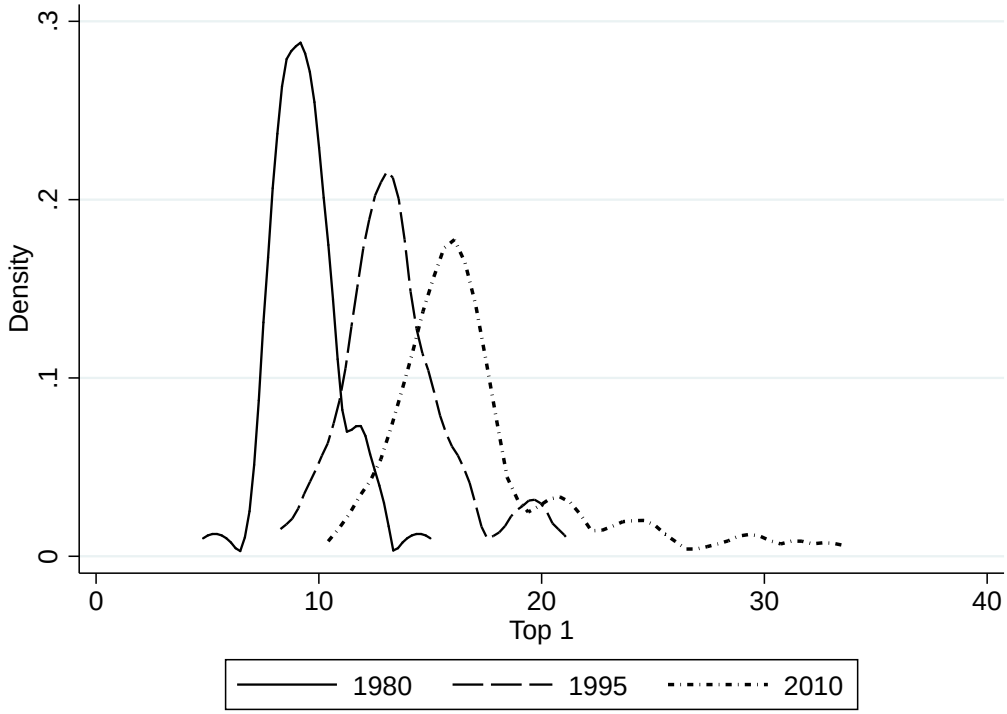
Troiano, Ugo, "Do Taxes Increase Economic Inequality? A Comparative Study Based on the State Personal Income Tax," Working Paper 24175, National Bureau of Economic Research December 2017.

Zidar, Owen M., "Tax Cuts for Whom? Heterogeneous Effects of Income Tax Changes on Growth and Employment," Working Paper 21035, National Bureau of Economic Research 2015.

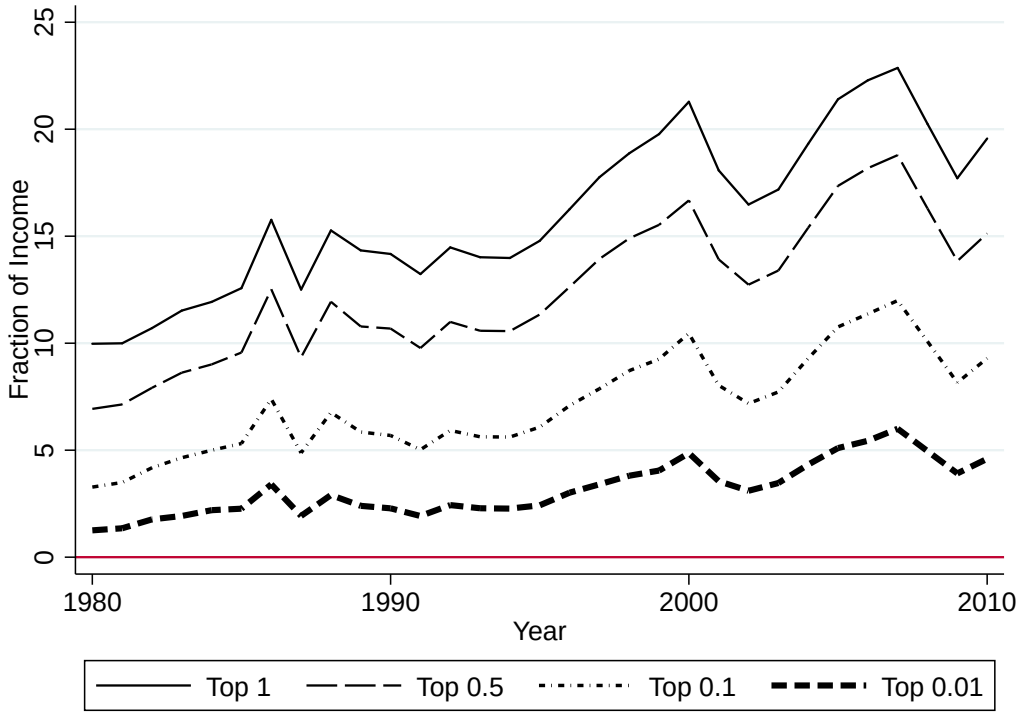
Zwick, Eric and James Mahon, "Tax Policy and Heterogeneous Investment Behavior," *American Economic Review*, January 2017, *107* (1), 217–48.

Figure 1: Trends in Top Income Inequality

A. The shift in densities for the percent of income going to the top 1% of earners



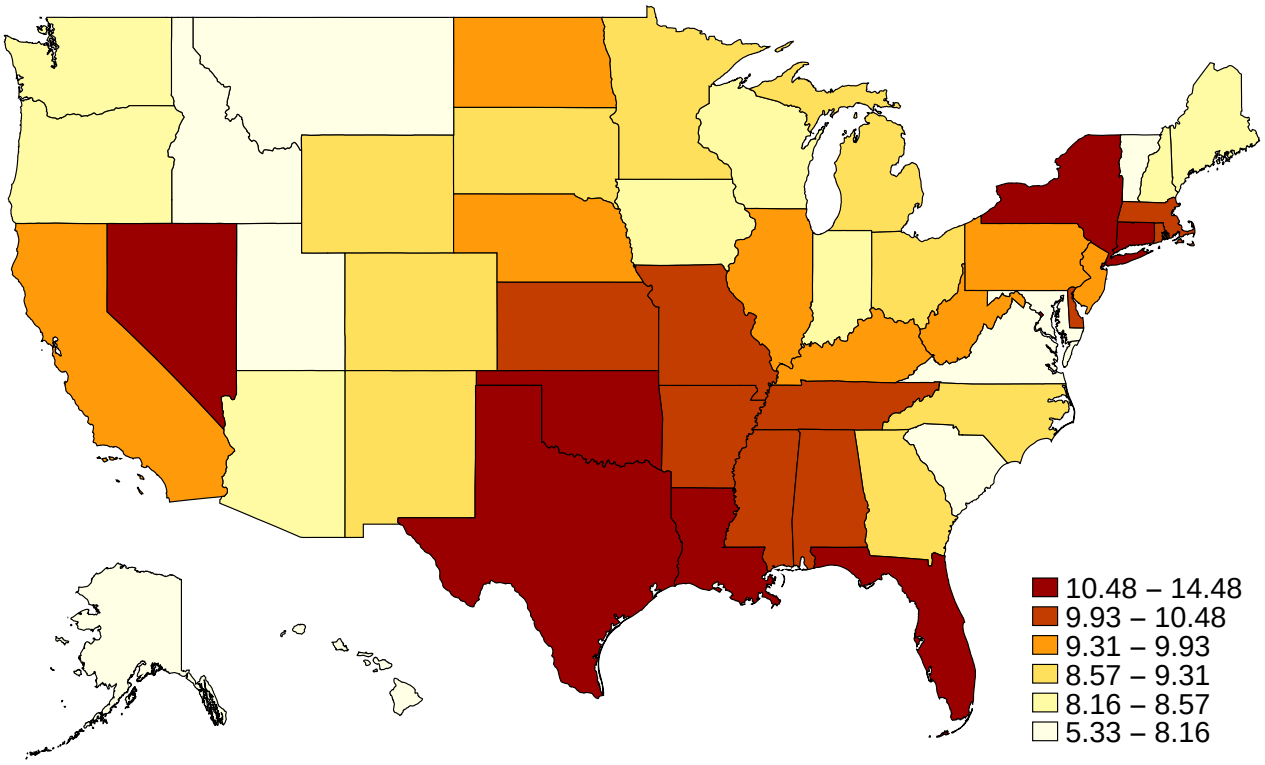
B. Trends of top 1% of earners and above



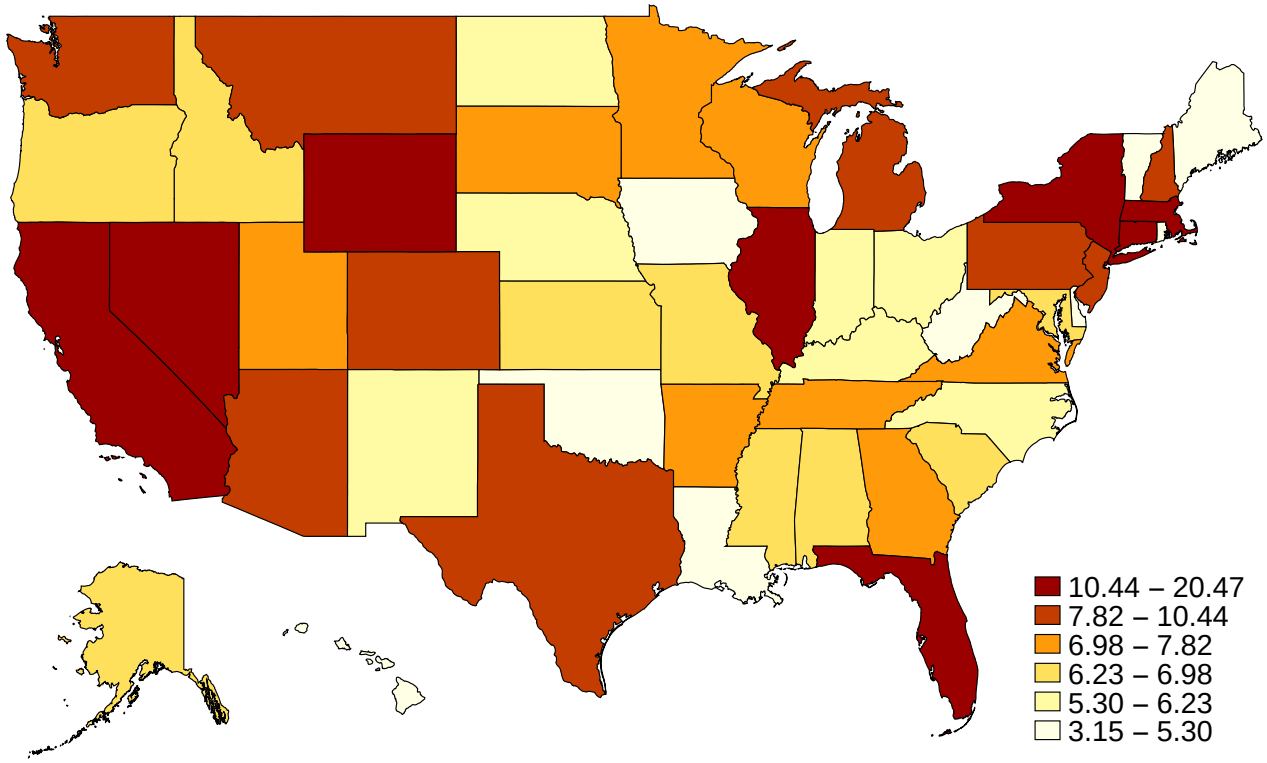
NOTES: Figure 1 describes how the distribution of income has shifted from 1980-2010 in aggregate.

Figure 2: Maps of Income Inequality by State

A. Fraction of Income Going to Top 1% by State: 1980

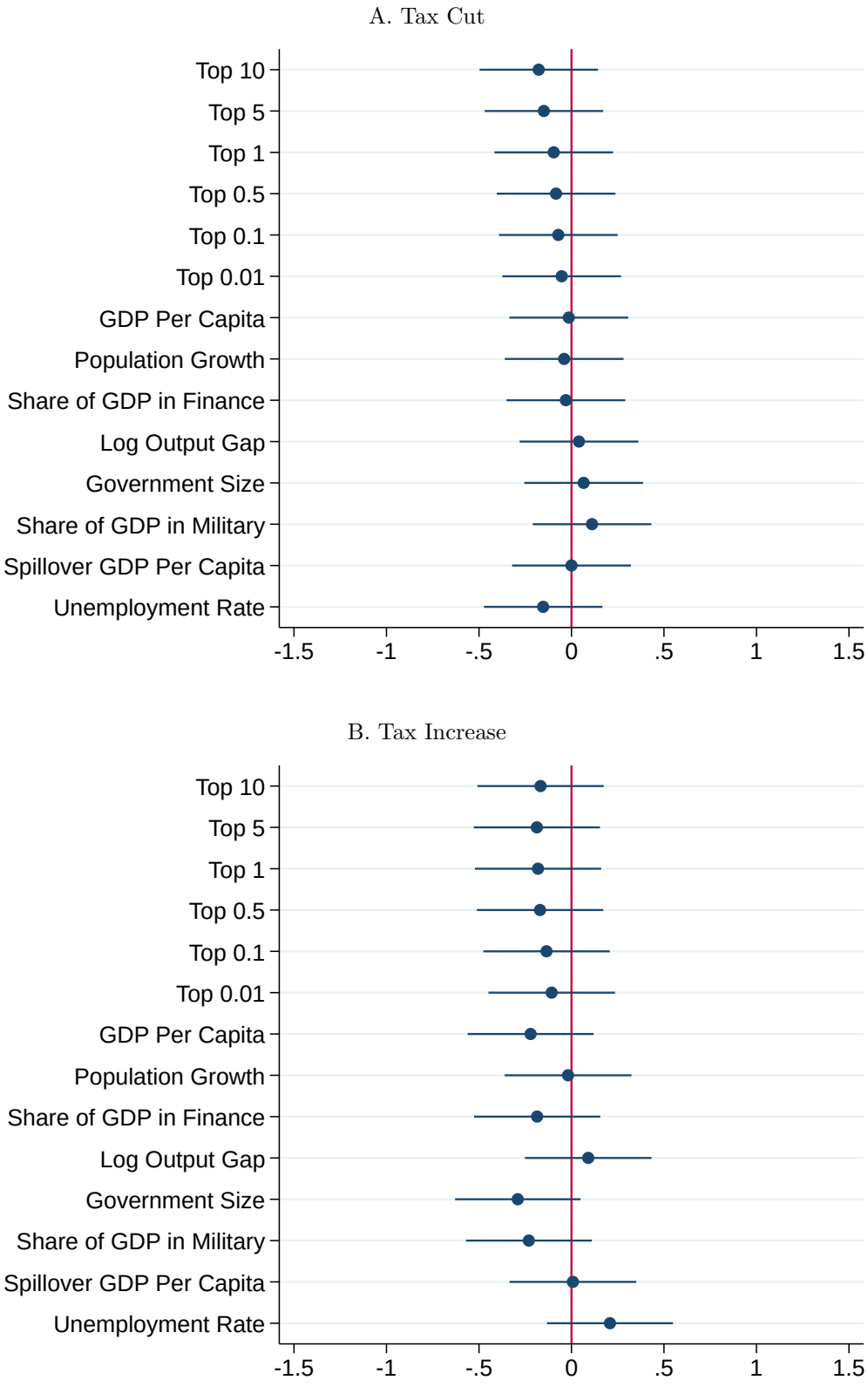


B. Change in Fraction of Income Going to Top 1% by State: 1980-2010



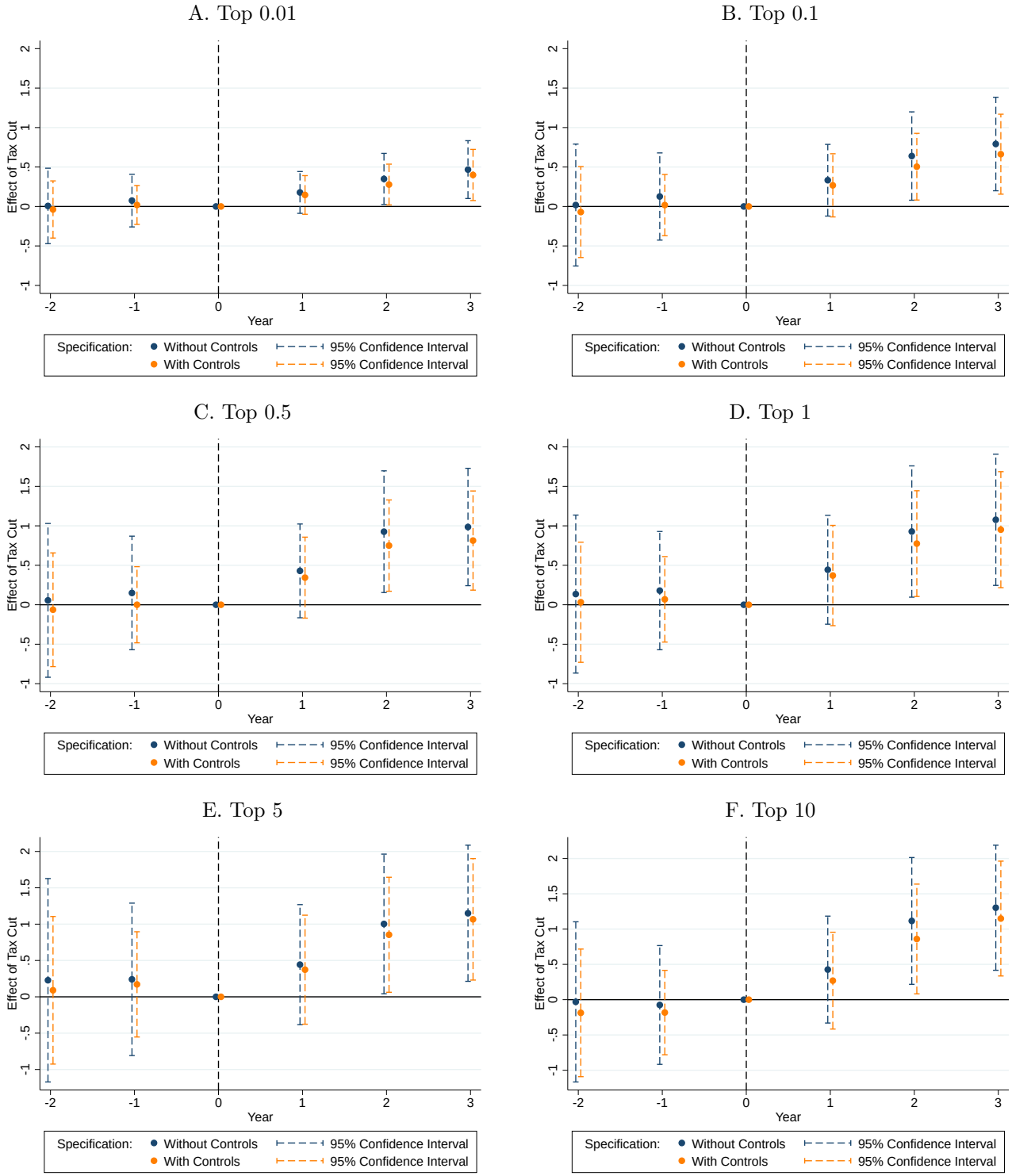
NOTES: Figure 2 describes how the distribution of income has shifted from 1980-2010 at the state level.

Figure 3: Differences Between Treatment and Control Groups



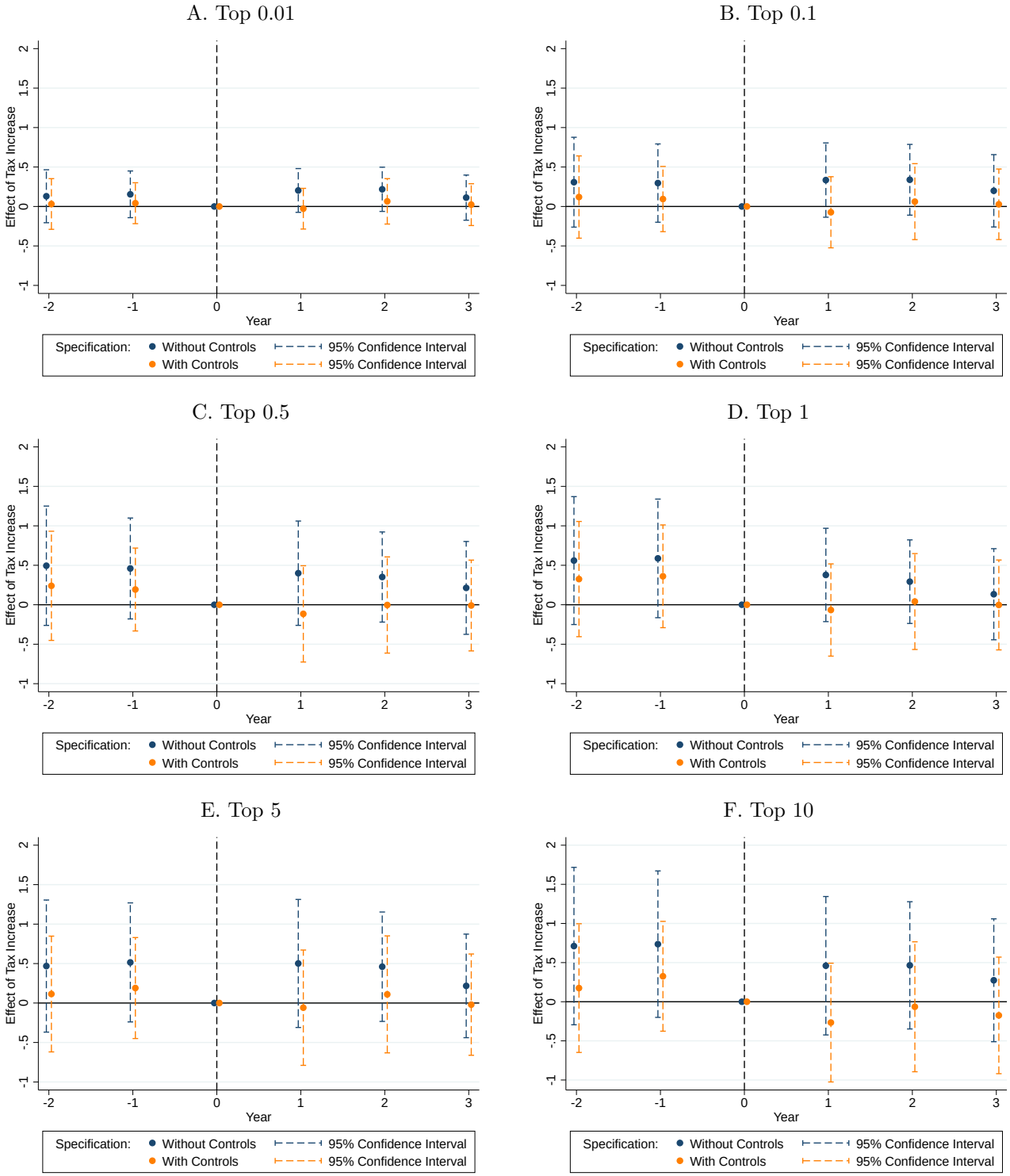
Notes: Figure 3 describes the differences in means for all variables of interest for the treatment and control groups for years t-3 to t-1. Horizontal bars represent the 95% confidence interval. All variables are defined in Appendix A.

Figure 4: Dynamic Effects of Tax Cuts



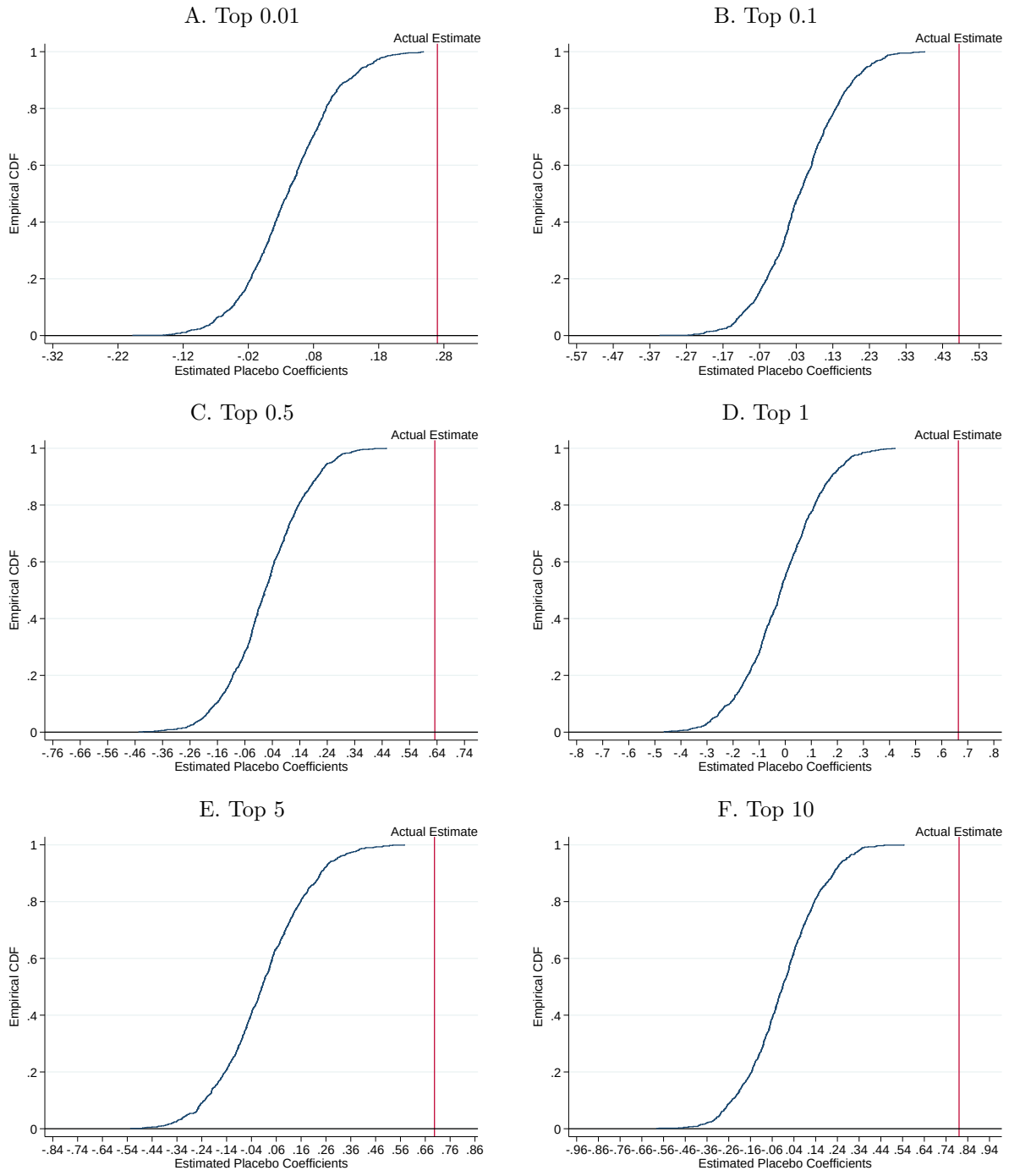
NOTES: Figure 4 shows how tax cuts impact income inequality over time for all measures of income inequality. Year 0 represents the year in which the treated state cuts its corporate tax rate.

Figure 5: Dynamic Effects of Tax Increases



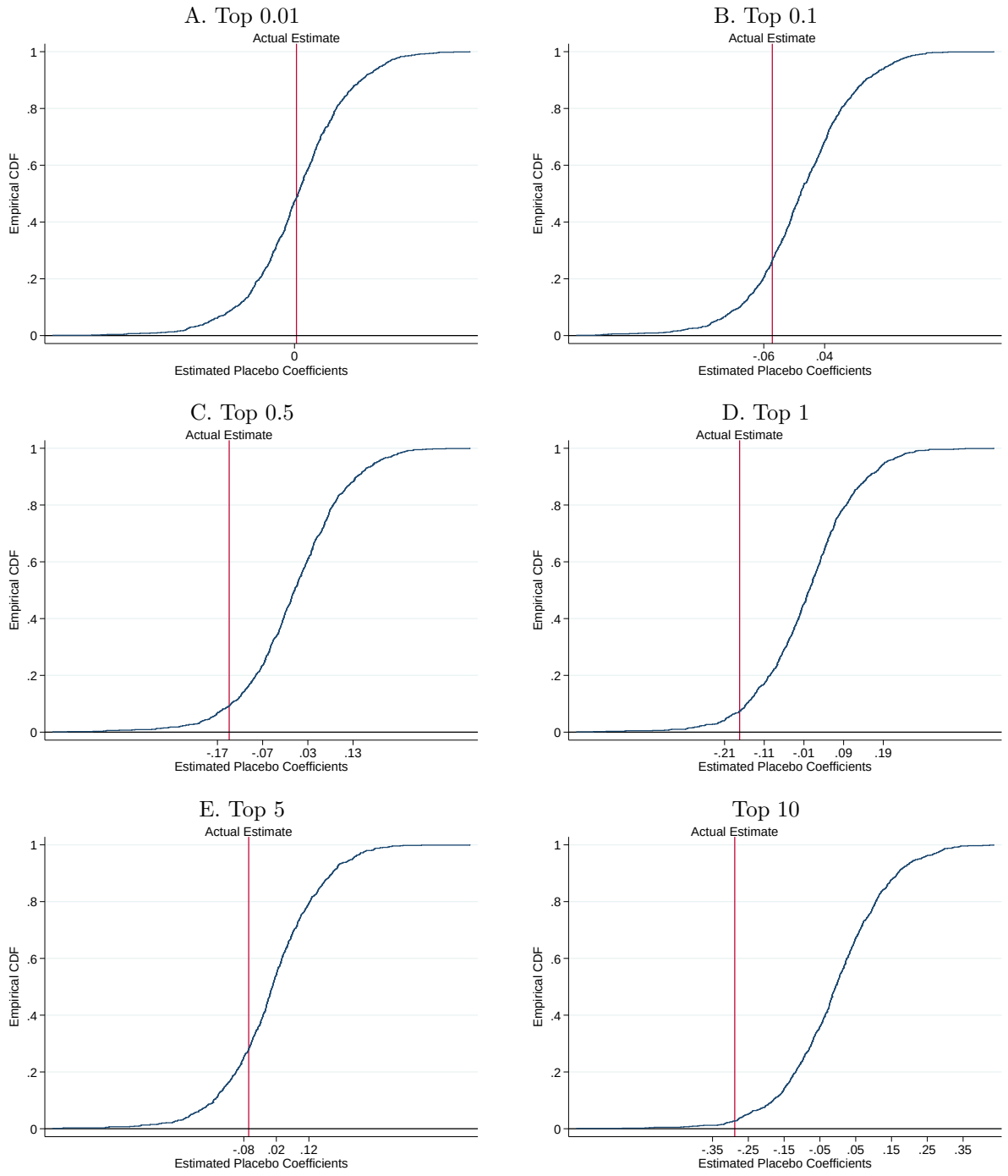
NOTES: Figure 5 shows how tax cuts impact income inequality over time for all measures of income inequality. Year 0 represents the year in which the treated state cuts its corporate tax rate.

Figure 6: The CDFs of the Coefficient on Post X Tax Cut across Placebo Tests



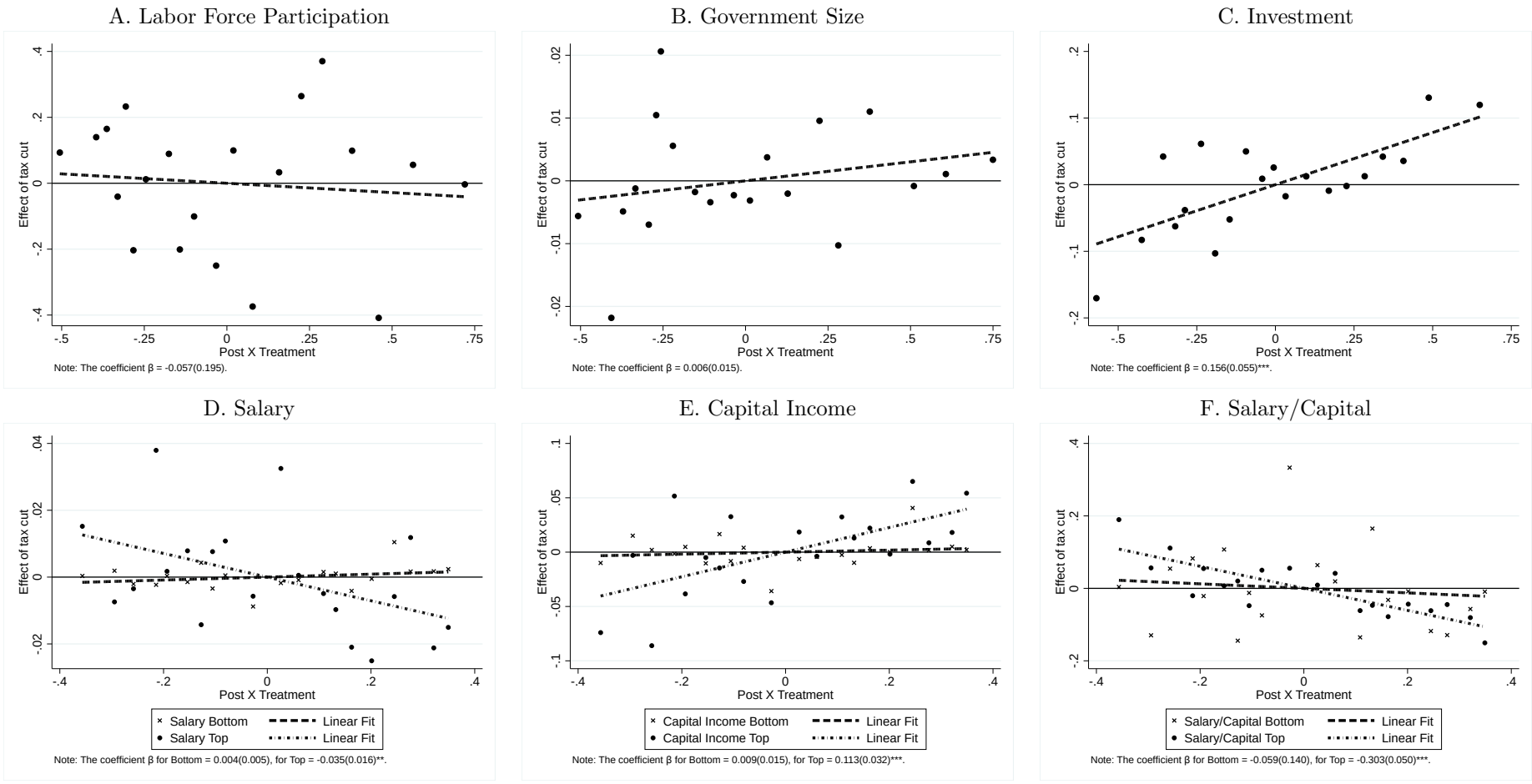
NOTES: Figure 6 reports the cumulative distribution function of the coefficient on Post X Tax Cut for placebo tests for all measures of income inequality. The placebo tests consist of assigning a random non-tax-cut year to each treated state and treating that year as if it were the actual year in which the state had its first tax cut. This state-year is matched with a control state using the methodology described in Section 3.2. Next, we run Equation 3.2 using the as-if tax cut year. This simulation is run 1,000 times for each coefficient, and the CDF is reported here. The vertical line identifies where the actual coefficient values from Table 3 (Columns (7) - (12)) fall within the distributions.

Figure 7: The CDFs of the Coefficient on Post X Tax Cut across Placebo Tests



NOTES: Figure 7 reports the cumulative distribution function of the coefficient on Post X Tax Increase for placebo tests for all measures of income inequality. The placebo tests consist of assigning a random non-tax-cut year to each treated state and treating that year as if it were the actual year in which the state had its first tax cut. This state-year is matched with a control state using the methodology described in Section 3.2. Next, we run Equation 3.2 using the as-if tax cut year. This simulation is run 1,000 times for each coefficient, and the CDF is reported here. The vertical line identifies where the actual coefficient values from Table 4 (Columns (7) - (12)) fall within the distributions.

Figure 8: Mechanisms Linking Tax Cuts with Income Inequality



NOTES: Figure 8 reports how various factors potentially related to income inequality are impacted by tax cuts. All variables are defined in Appendix A.

Table 1: Summary Statistics

	count	mean	p25	p50	p75
Top 10	1700	40.04	36.17	39.74	43.12
Top 5	1700	28.52	24.65	28.18	31.29
Top 1	1700	14.57	11.45	13.83	16.49
Top 0.5	1700	11.14	8.40	10.34	12.78
Top 0.1	1700	6.26	4.29	5.59	7.38
Top 0.01	1700	2.71	1.63	2.24	3.21
Corporate Rate	1700	6.57	5.00	6.98	8.70
GDP Per Capita	1700	10.17	9.80	10.21	10.57
Population Growth	1700	0.01	0.00	0.01	0.01
Share of GDP in Finance	1700	8.37	7.85	8.41	8.86
Log Output Gap	1700	0.00	-0.01	0.00	0.01
Government Size	1700	8.17	7.81	8.21	8.57
Share of GDP in Military	1700	5.80	5.22	5.87	6.31
Spillover GDP Per Capita	1700	14.10	13.71	14.12	14.50
Unemployment Rate	1700	6.06	4.50	5.60	7.30

NOTES: Table 1 presents the descriptive statistics for inequality measures and other macroeconomic variables. The sample has 1,700 state-years from 1979-2012. All variables are defined in Appendix A.

Table 2: Difference-in-Differences Estimates of the Effects of Corporate Taxes on Income Inequality

	(1) Top 10	(2) Top 5	(3) Top 1	(4) Top 0.5	(5) Top 0.1	(6) Top 0.01	(7) Top 10	(8) Top 5	(9) Top 1	(10) Top 0.5	(11) Top 0.1	(12) Top 0.01
Corporate Rate	-0.671***	-0.675***	-0.588***	-0.530***	-0.388**	-0.229**	-0.623***	-0.628**	-0.534**	-0.483**	-0.358**	-0.215**
	(0.208)	(0.241)	(0.206)	(0.187)	(0.147)	(0.094)	(0.209)	(0.245)	(0.209)	(0.190)	(0.150)	(0.096)
GDP Per Capita							1.585	5.853	5.731	5.120	3.419	1.566
							(4.620)	(4.163)	(3.761)	(3.581)	(2.818)	(1.706)
Population Growth							4.118	10.958	11.820	10.235	5.648	2.390
							(19.006)	(20.170)	(20.101)	(19.999)	(17.821)	(12.875)
Share of GDP in Finance							0.773	-0.161	0.478	0.449	0.292	0.221
							(1.845)	(1.938)	(1.841)	(1.746)	(1.433)	(0.932)
Log Output Gap							5.712	2.920	2.711	3.626	3.879	2.970
							(4.391)	(4.313)	(4.154)	(4.093)	(3.443)	(2.317)
Government Size							-3.643	-0.643	-0.450	-0.111	0.337	0.583
							(3.309)	(3.448)	(3.311)	(3.146)	(2.564)	(1.716)
Share of GDP in Military							0.794	0.486	0.191	0.200	0.035	-0.079
							(0.805)	(0.839)	(0.721)	(0.672)	(0.512)	(0.326)
Spillover GDP Per Capita							-60.032	73.852	108.764	107.158	77.308	43.701
							(83.528)	(74.385)	(73.001)	(73.709)	(69.927)	(54.049)
Unemployment Rate							0.159	0.123	0.101	0.076	0.042	0.012
							(0.109)	(0.120)	(0.108)	(0.098)	(0.076)	(0.049)
Observations	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Adjusted R^2	0.798	0.822	0.790	0.763	0.714	0.613	0.804	0.828	0.798	0.771	0.721	0.619
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of States	50	50	50	50	50	50	50	50	50	50	50	50

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

NOTES: Table 2 documents the relation between tax changes and income inequality for the full sample of state-years estimated using the specification in Equation 3. Corporate Rate is the top marginal corporate tax rate in the state. Top X is the percent of income received by the top X%, where X is 10, 5, 1, 0.5, 0.1, or 0.01. p-values are reporter in parentheses. Standard errors are clustered at the state level. All variables are defined in Appendix A

Table 3: Matching Estimates of the Effects of Corporate Tax Cuts on Income Inequality

	(1) Top 10	(2) Top 5	(3) Top 1	(4) Top 0.5	(5) Top 0.1	(6) Top 0.01	(7) Top 10	(8) Top 5	(9) Top 1	(10) Top 0.5	(11) Top 0.1	(12) Top 0.01
Post X Tax Cut	0.943**	0.780**	0.755**	0.735**	0.554**	0.312**	0.800**	0.697**	0.664**	0.632**	0.475**	0.270**
	(0.366)	(0.373)	(0.329)	(0.300)	(0.231)	(0.137)	(0.319)	(0.327)	(0.280)	(0.242)	(0.186)	(0.114)
GDP Per Capita							14.807	13.517	14.433*	15.494**	12.053**	6.445**
							(9.145)	(9.332)	(7.220)	(5.999)	(4.855)	(2.997)
Population Growth							25.090	25.742	9.795	22.028	15.280	10.071
							(20.151)	(20.240)	(18.061)	(18.125)	(15.187)	(9.712)
Share of GDP in Finance							2.484	3.924	2.361	2.335	1.557	1.037
							(2.803)	(2.865)	(2.329)	(2.539)	(1.787)	(1.060)
Log Output Gap							-14.802*	-10.327	-7.230	-6.440	-5.327	-2.442
							(8.426)	(9.042)	(6.699)	(5.655)	(4.817)	(3.095)
Government Size							6.815*	5.692	6.027**	6.581**	4.800**	2.663**
							(3.787)	(3.694)	(2.591)	(3.187)	(1.876)	(1.013)
Share of GDP in Military							-0.043	0.875	-0.001	0.207	0.138	0.109
							(0.832)	(0.852)	(0.581)	(0.616)	(0.436)	(0.264)
Spillover GDP Per Capita							416.983**	274.094	269.970*	392.489***	301.027***	172.577***
							(163.331)	(167.490)	(135.063)	(114.824)	(92.939)	(60.247)
Unemployment Rate							-0.317*	-0.329**	-0.265*	-0.158	-0.127	-0.071
							(0.167)	(0.159)	(0.132)	(0.143)	(0.105)	(0.061)
Observations	300	300	300	300	300	300	300	300	300	300	300	300
Adjusted R^2	0.738	0.769	0.789	0.753	0.731	0.677	0.783	0.827	0.838	0.821	0.801	0.749
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of States	32	32	32	32	32	32	32	32	32	32	32	32

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

NOTES: Table 3 reports the results of implementing Equation 4 for the matched tax-cut sample. Post X Tax Cut is an indicator equal to 1 in years t+1 to t+3 for states that had tax cuts, and 0 otherwise. Top X is the percent of income received by the top X%, where X is 10, 5, 1, 0.5, 0.1, or 0.01. p-values are reporter in parentheses. Standard errors are clustered at the state level. All variables are defined in Appendix A

Table 4: Matching Estimates of the Effects of Corporate Tax Increases on Income Inequality

	(1) Top 10	(2) Top 5	(3) Top 1	(4) Top 0.5	(5) Top 0.1	(6) Top 0.01	(7) Top 10	(8) Top 5	(9) Top 1	(10) Top 0.5	(11) Top 0.1	(12) Top 0.01
Post X Tax Increase	0.103	0.188	0.031	0.124	0.165	0.118	-0.288	-0.065	-0.172	-0.144	-0.046	0.002
	(0.338)	(0.294)	(0.226)	(0.254)	(0.198)	(0.131)	(0.308)	(0.267)	(0.217)	(0.236)	(0.197)	(0.126)
GDP Per Capita							11.945	6.052	7.201	2.224	3.507	1.934
							(8.655)	(6.858)	(5.929)	(5.430)	(4.308)	(2.711)
Population Growth							11.899	3.713	6.223	2.941	-1.925	-2.426
							(26.500)	(22.076)	(21.049)	(19.497)	(15.278)	(9.610)
Share of GDP in Finance							-6.562*	-0.151	-0.808	0.035	-0.171	0.192
							(3.304)	(2.867)	(2.188)	(2.342)	(1.729)	(0.937)
Log Output Gap							14.792	21.336	21.659	26.085	17.836	10.635
							(16.534)	(17.431)	(15.793)	(16.395)	(12.666)	(7.884)
Government Size							-5.196	-5.062	-2.434	-0.906	-1.140	-0.753
							(3.904)	(3.279)	(3.213)	(2.995)	(2.275)	(1.507)
Share of GDP in Military							1.588**	1.863***	1.072**	1.296**	0.974**	0.578*
							(0.638)	(0.654)	(0.514)	(0.520)	(0.445)	(0.298)
Spillover GDP Per Capita							774.519***	563.748***	450.749**	325.188*	241.288	125.620
							(229.156)	(200.299)	(193.184)	(176.338)	(143.255)	(88.465)
Unemployment Rate							-0.096	0.004	0.039	0.014	0.039	0.038
							(0.115)	(0.098)	(0.101)	(0.092)	(0.080)	(0.053)
Observations	264	264	264	264	264	264	264	264	264	264	264	264
Adjusted R^2	0.505	0.629	0.651	0.588	0.573	0.487	0.602	0.684	0.697	0.653	0.633	0.549
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of States	34	34	34	34	34	34	34	34	34	34	34	34

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

NOTES: Table 4 reports the results of implementing Equation 4 for the matched tax-increase sample. Post X Tax Increase is an indicator equal to 1 in years t+1 to t+3 for states that had tax increases, and 0 otherwise. Top X is the percent of income received by the top X%, where X is 10, 5, 1, 0.5, 0.1, or 0.01. p-values are reporter in parentheses. Standard errors are clustered at the state level. All variables are defined in Appendix A

Table 5: Corporate Tax Cuts, Government Spending, Labor Market, and Industry-Level Invesment

	Government Size		Labor Force Participation		Investment	
	(1)	(2)	(1)	(2)	(1)	(2)
Post X Tax Cut	0.007	0.006	0.099	-0.057	0.137**	0.156***
	(0.015)	(0.015)	(0.266)	(0.195)	(0.059)	(0.055)
Population Growth		0.681		17.251		-1.327
		(1.334)		(19.060)		(6.772)
GDP Per Capita				18.240***		6.759***
				(6.251)		(1.773)
Share of GDP in Finance				2.321		-0.805
				(2.327)		(0.562)
Log Output Gap				-20.113**		-2.426
				(8.054)		(2.078)
Government Size				2.865		-1.663
				(3.398)		(1.090)
Share of GDP in Military				-0.896		0.209
				(0.615)		(0.203)
Spillover GDP Per Capita				399.937***		33.712
				(143.233)		(55.357)
Unemployment Rate				-0.789***		-0.021
				(0.228)		(0.040)
Observations	300	300	300	300	3087	3087
Adjusted R^2	0.959	0.959	0.282	0.590	0.563	0.573
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
State Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of States	32	32	32	32		
Number of StateXIndustry					560	560

NOTES: Table 5 reports how tax cuts impact other factors that may effect income inequality. Post X Tax Cut is an indicator equal to 1 in years t+1 to t+3 for states that had tax cuts, and 0 otherwise. Government Size is government spending per capita. Labor Force Participation is the percent of the working-age population that is employed. Investment is the natural log of total corporate investment, measured at the industry level. p-values are reporter in parentheses. Standard errors are clustered at the state level. All variables are defined in Appendix A

Table 6: Corporate Tax Cuts and the Distribution of Labor and Capital Income

	AGI			Salary			Capital Income			Salary/Capital		
	Bottom	Top	Total	Bottom	Top	Total	Bottom	Top	Total	Bottom	Top	Total
Post X Tax Cut	0.003	0.035**	0.015***	0.004	-0.035**	0.005	0.009	0.113***	0.065***	-0.059	-0.303***	-0.402***
	(0.005)	(0.017)	(0.006)	(0.005)	(0.016)	(0.005)	(0.015)	(0.032)	(0.020)	(0.140)	(0.050)	(0.117)
GDP Per Capita	0.595***	2.133***	0.764***	0.699***	1.797***	0.746***	0.802***	1.679***	0.600*	-0.813	0.066	0.724
	(0.070)	(0.263)	(0.089)	(0.073)	(0.247)	(0.071)	(0.234)	(0.499)	(0.307)	(2.163)	(0.776)	(1.803)
Population Growth	-0.205	-7.533***	-2.068**	0.103	-6.520***	-0.713	-8.618***	-10.245**	-9.706***	60.845***	14.127*	33.547*
	(0.678)	(2.536)	(0.859)	(0.707)	(2.382)	(0.681)	(2.255)	(4.817)	(2.966)	(20.858)	(7.481)	(17.393)
Share of GDP in Finance	-0.043	0.344**	0.083*	-0.101**	0.053	-0.063	0.361***	0.817***	0.662***	-3.392***	-1.279***	-3.002***
	(0.039)	(0.144)	(0.049)	(0.040)	(0.135)	(0.039)	(0.128)	(0.274)	(0.168)	(1.185)	(0.425)	(0.988)
Log Output Gap	-0.601***	-1.903***	-0.697***	-0.546***	-0.959**	-0.535***	-1.450***	-1.239	-0.360	2.282	-0.123	-3.711
	(0.114)	(0.425)	(0.144)	(0.119)	(0.400)	(0.114)	(0.378)	(0.808)	(0.497)	(3.499)	(1.255)	(2.917)
Government Size	-0.165**	0.725**	-0.083	-0.119	0.817***	-0.113	-0.054	0.910	0.153	1.397	0.601	0.718
	(0.081)	(0.304)	(0.103)	(0.085)	(0.285)	(0.082)	(0.270)	(0.577)	(0.355)	(2.499)	(0.896)	(2.083)
Share of GDP in Military	0.080***	-0.043	0.076**	0.047*	-0.000	0.064***	0.226***	0.110	0.164	-1.471**	-0.347	-0.614
	(0.024)	(0.089)	(0.030)	(0.025)	(0.084)	(0.024)	(0.079)	(0.169)	(0.104)	(0.733)	(0.263)	(0.612)
Spillover GDP Per Capita	0.833***	-1.061***	0.610***	0.760***	-0.811***	0.703***	0.206	-1.209**	0.129	2.534	0.428	1.139
	(0.072)	(0.267)	(0.091)	(0.075)	(0.251)	(0.072)	(0.238)	(0.508)	(0.313)	(2.200)	(0.789)	(1.835)
Unemployment Rate	-0.001	-0.021	-0.013**	-0.006	0.007	-0.009**	-0.024*	-0.078**	-0.063***	0.323**	0.237***	0.406***
	(0.004)	(0.016)	(0.005)	(0.005)	(0.015)	(0.004)	(0.014)	(0.031)	(0.019)	(0.133)	(0.048)	(0.111)
Observations	84	84	84	84	84	84	84	84	84	84	84	84
Adjusted R^2	0.980	0.971	0.982	0.979	0.968	0.988	0.934	0.952	0.955	0.936	0.893	0.936
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of States	14	14	14	14	14	14	14	14	14	14	14	14

NOTES: Table 6 reports how tax cuts relate to pre-tax income attributable to total individual earnings, capital earnings, and wages. Post X Tax Cut is an indicator equal to 1 in years t+1 to t+3 for states that had tax cuts, and 0 otherwise. AGI is the natural log of adjusted gross income. Salary is the natural log of pre-tax income attributable to salaries and wages. Capital income is the natural log of pre-tax income attributable to capital. Salary/Capital is salary income divided by capital income. "Bottom" is the total value of the variable for those making below $200,000. "Top" is the total value of the variable for those making above $200,000. "Total" is the total value of the variable for all income levels. p-values are reporter in parentheses. Standard errors are clustered at the state level. All variables are defined in Appendix A.

Table 7: Matching Estimates of the Effects of Corporate Tax Cuts on Income Inequality: Robustness to Alternative Measures of Income Inequality

	Theil	Gini	Relative Mean Dev	Atkinson	Theil	Gini	Relative Mean Dev	Atkinson
Post X Tax Cut	0.020***	0.006***	0.005**	0.003***	0.019***	0.006***	0.005**	0.003***
	(0.006)	(0.002)	(0.002)	(0.001)	(0.005)	(0.002)	(0.002)	(0.001)
GDP Per Capita					0.181***	0.059***	0.108***	0.034***
					(0.055)	(0.014)	(0.019)	(0.011)
Population Growth					0.171	-0.208***	-0.303***	0.034
					(0.306)	(0.080)	(0.105)	(0.058)
Share of GDP in Finance					0.006	-0.009	-0.018**	0.000
					(0.026)	(0.007)	(0.009)	(0.005)
Log Output Gap					-0.150	0.003	-0.040	-0.033*
					(0.101)	(0.026)	(0.035)	(0.019)
Government Size					0.082**	0.022**	0.028**	0.014*
					(0.040)	(0.010)	(0.014)	(0.008)
Share of GDP in Military					0.014**	-0.005***	0.001	0.004***
					(0.007)	(0.002)	(0.002)	(0.001)
Spillover GDP Per Capita					-0.164***	-0.006	-0.026**	-0.019***
					(0.038)	(0.010)	(0.013)	(0.007)
Unemployment Rate					-0.002	-0.000	0.000	-0.000
					(0.002)	(0.000)	(0.001)	(0.000)
Observations	300							
R^2	0.943	0.866	0.915	0.955	0.955	0.879	0.936	0.965
Year Fixed Effects	Yes							
State Fixed Effects	Yes							

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

NOTES: The results reported in Table 7 use seemingly unrelated regressions to examine how tax cuts impact alternative measures of income inequality. Post X Tax Cut is an indicator equal to 1 in years t+1 to t+3 for states that had tax cuts, and 0 otherwise. p-values are reporter in parentheses. Standard errors are clustered at the state level. All variables are defined in Appendix A

Appendices

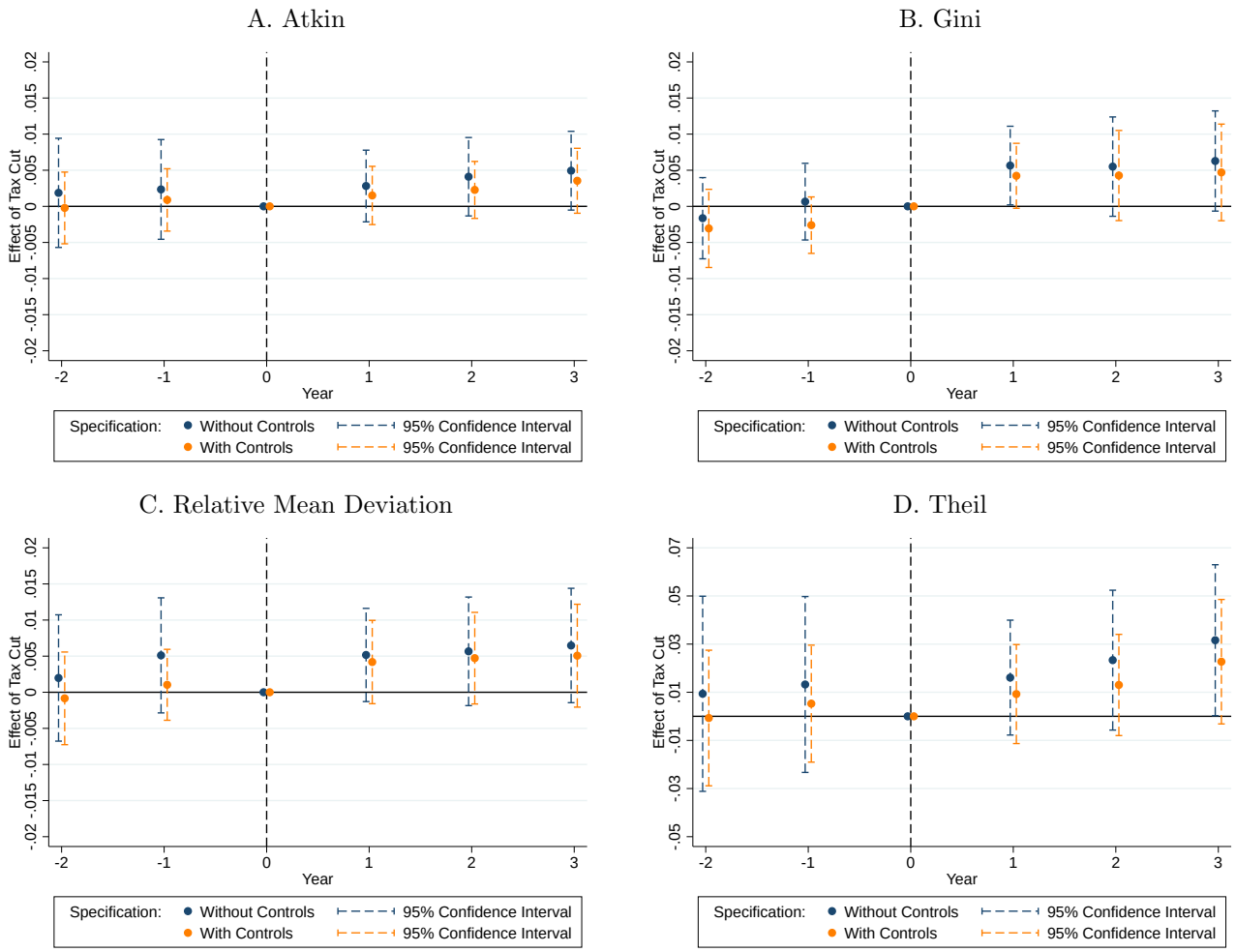
A Variable definitions

Variable name	Definition
	Income inequality variables
Top 10	Share of income held by the top 10% of the population
Top 5	Share of income held by the top 5% of the population
Top 1	Share of income held by the top 1% of the population
Top 0.5	Share of income held by the top 0.5% of the population
Top 0.1	Share of income held by the top 0.1% of the population
Top 0.01	Share of income held by the top 0.01% of the population
Theil	The Theil Entropy Index (Frank, 2014)
Gini	The Gini coefficient, defined as the average distance between all pairs of proportional income in the state (Frank, 2014)
Relative Mean Dev	The average absolute distance between each individual's income and the mean income of the state (Frank, 2014)
Atkinson	The Atkinson Index (Frank, 2014)
	Additional variables of interest
Corporate Rate	The state-level corporate tax rate, measured following Suárez Serrato and Zidar (2016) as a combination of the rate for C-corporations, which pay state corporate taxes, and S-corporations, which pay personal taxes
Government Size	The natural log of the portion of GDP attributable to government scaled by total population
Labor Force Participation	The percentage of the working-age population that is employed
AGI Bottom	Pre-tax aggregate gross income reported to the IRS by those earning less than $200,000
AGI Top	Pre-tax aggregate gross income reported to the IRS by those earning more than $200,000
AGI Total	Pre-tax aggregate gross income reported to the IRS by all tax filers
Salary Bottom	Salary and wage income reported to the IRS by those earning less than $200,000
Salary Top	Salary and wage income reported to the IRS by those earning more than $200,000
Salary Total	Salary and wage income reported to the IRS by all tax filers
Capital Income Bottom	Dividend, interest, rent, royalties, and entrepreneurial income reported to the IRS by those earning less than $200,000
Capital Income Top	Dividend, interest, rent, royalties, and entrepreneurial income reported to the IRS by those earning more than $200,000
Capital Income Total	Dividend, interest, rent, royalties, and entrepreneurial income reported to the IRS by all tax filers
Investment	The natural log of total investment, measured at the industry-state level, where industries correspond to 3-digit NAICS

Variable name	Definition
	Control variables
GDP Per Capita	The natural log of gross domestic product scaled by total population
Population Growth	The year-over-year percent change in population
Share of GDP in Finance	The natural log of the portion of GDP attributable to the finance industry scaled by total population
Log Output Gap	The natural log of the relative distance of GDP per capita to its filtered value, calculated following Aghion et al. (2015) using an HP filter of λ equal to 6.25
Share of GDP in Military	The natural log of the portion of GDP attributable to the military scaled by total population
Spillover GDP Per Capita	The weighted value of the natural log of other states' GDP Per Capita in the prior year
Unemployment Rate	The percent of the working-age population that is unemployed and actively seeking work

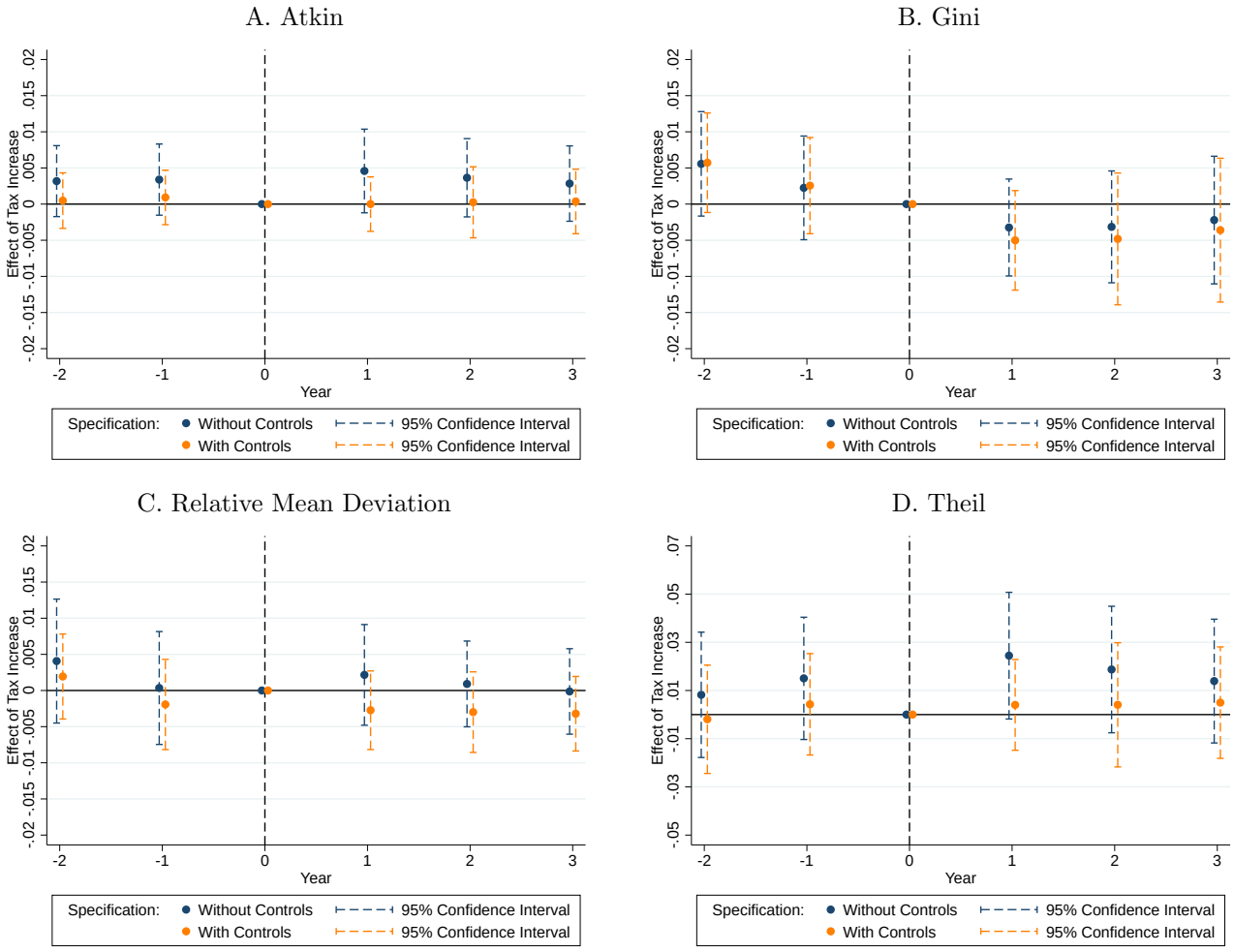
B Graph Appendix

Figure A.1: Effects of Tax Cuts on Alternative Measures of Income Inequality



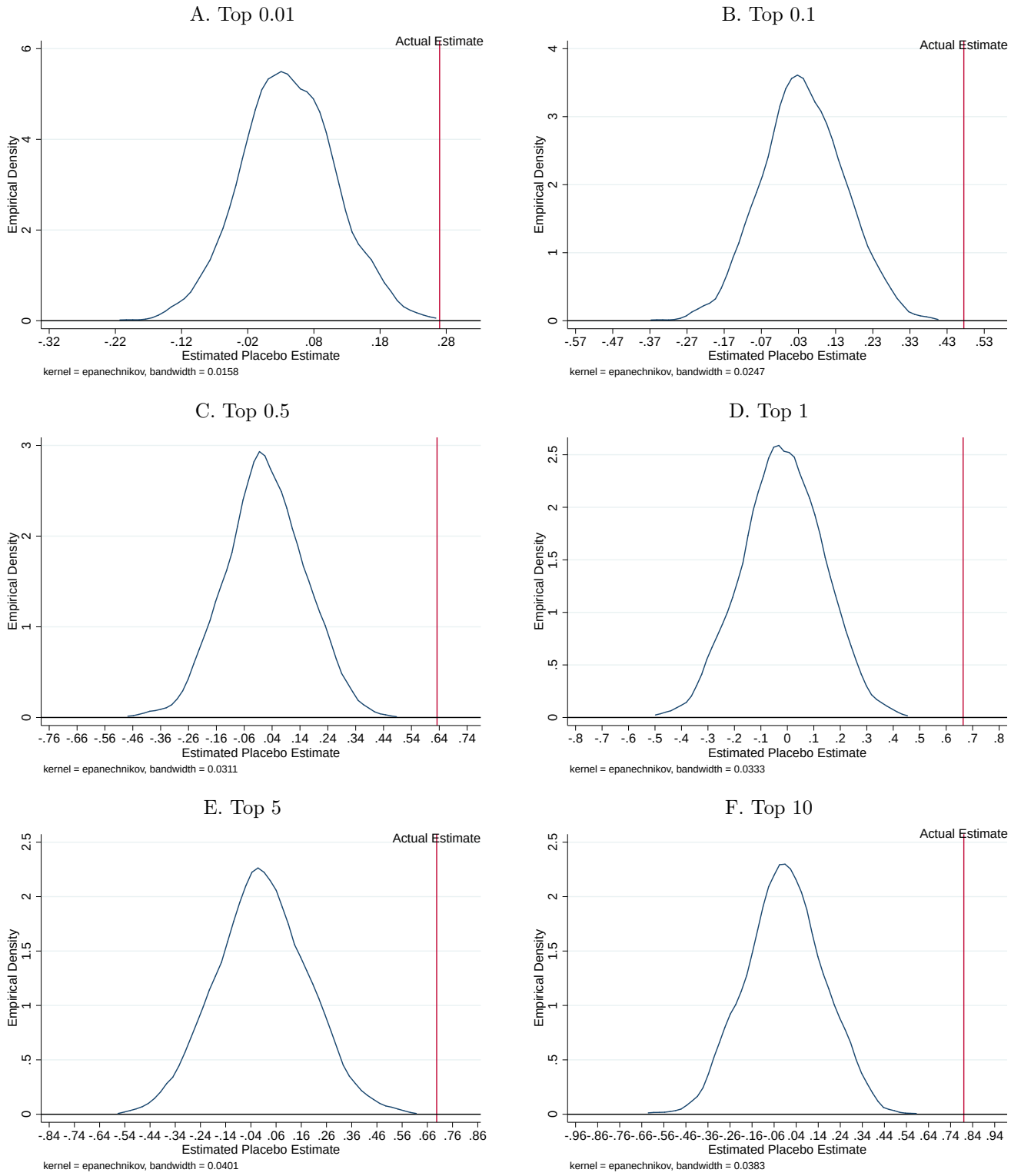
NOTES: Figure A.1 shows how tax cuts impact income inequality over time for alternative measures of income inequality. Year 0 represents the year in which the treated state cuts its corporate tax rate.

Figure A.2: Effects of Tax Increases on Alternative Measures of Income Inequality



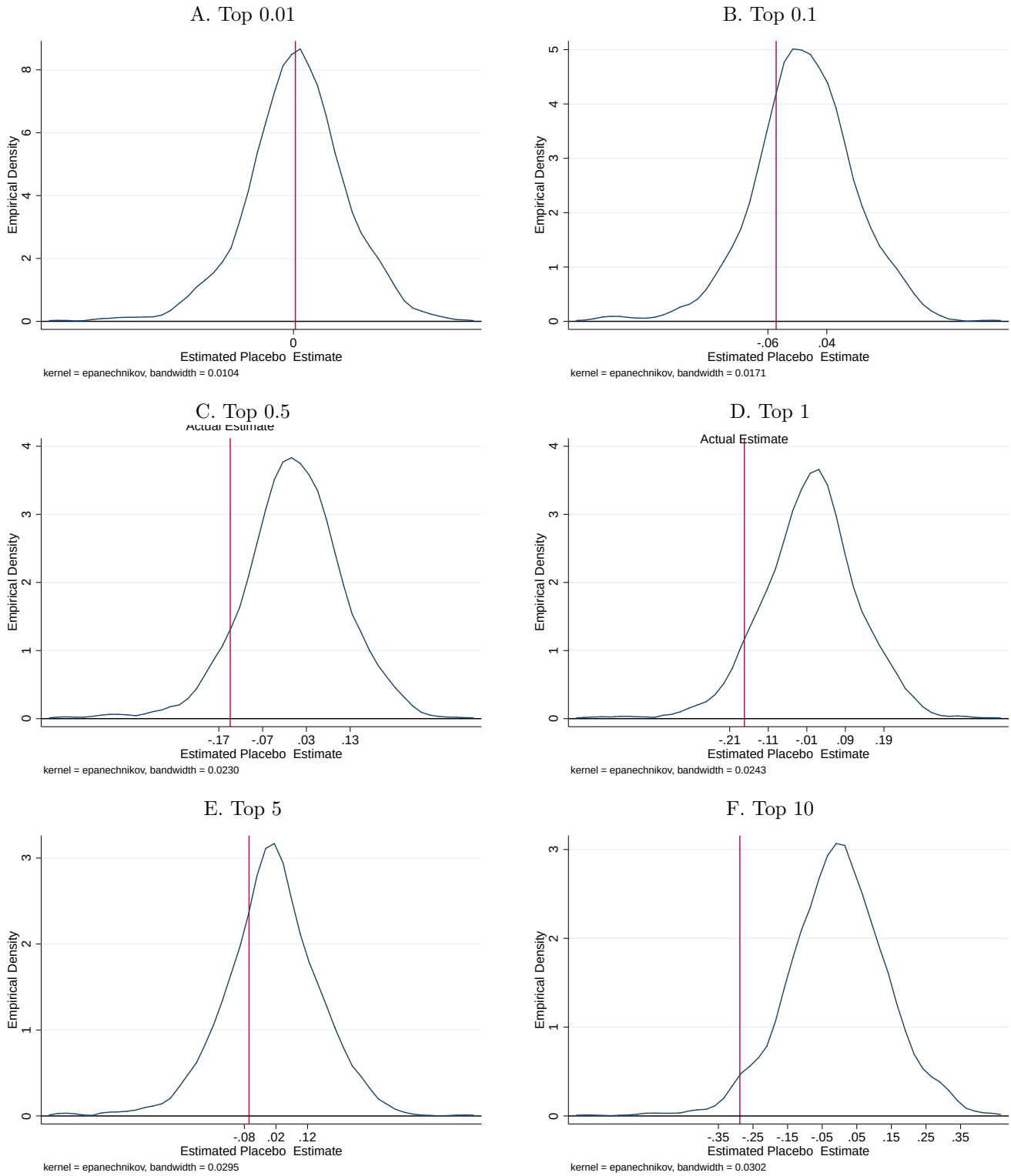
NOTES: Figure A.2 shows how tax cuts impact income inequality over time for alternative measures of income inequality. Year 0 represents the year in which the treated state cuts its corporate tax rate.

Figure A.3: Probability Density Function of Coefficients in Placebo Test for Tax Cuts



NOTES: Figure A.3 reports the probability density function of the coefficient on Post X Tax Cut for placebo tests for all measures of income inequality. The placebo tests consist of assigning a random non-tax-cut year to each treated state and treating that year as if it were the actual year in which the state had its first tax cut. This state-year is matched with a control state using the methodology described in Section 3.2. Next, we run Equation 3.2 using the as-if tax cut year. This simulation is run 1,000 times for each coefficient, and the PDF is reported here. The vertical line identifies where the actual coefficient values from Table 3 (Columns (7) - (12)) fall within the distributions.

Figure A.4: Probability Density Function of Coefficients in Placebo Test for Tax Increases



NOTES: Figure A.4 reports the probability density function of the coefficient on Post X Tax Increase for placebo tests for all measures of income inequality. The placebo tests consist of assigning a random non-tax-cut year to each treated state and treating that year as if it were the actual year in which the state had its first tax cut. This state-year is matched with a control state using the methodology described in Section 3.2. Next, we run Equation 3.2 using the as-if tax cut year. This simulation is run 1,000 times for each coefficient, and the CDF is reported here. The vertical line identifies where the actual coefficient values from Table 4 (Columns (7) - (12)) fall within the distributions.

C Table Appendix

Table A.1: Differences in means for the treatment and control groups for the tax cut sample

	Control	Treatment	Difference/SE
Top 10	39.40	40.10	-0.701
			(0.647)
Top 5	28.05	28.66	-0.615
			(0.674)
Top 1	14.16	14.49	-0.327
			(0.559)
Top 0.5	10.72	10.97	-0.252
			(0.495)
Top 0.1	5.833	5.986	-0.153
			(0.351)
Top 0.01	2.393	2.455	-0.0621
			(0.193)
GDP Per Capita	10.21	10.22	-0.00513
			(0.0581)
Population Growth	0.00608	0.00643	-0.000354
			(0.00147)
Share of GDP in Finance	8.433	8.448	-0.0146
			(0.0790)
Log Output Gap	0.00160	0.000902	0.000703
			(0.00283)
Government Size	8.260	8.226	0.0334
			(0.0830)
Share of GDP in Military	5.831	5.740	0.0911
			(0.134)
Spillover GDP Per Capita	14.11	14.11	0.0000857
			(0.0437)
Unemployment Rate	5.627	5.877	-0.251
			(0.268)

NOTES: Table A.1 describes the differences in means for all variables of interest for the treatment and control groups for years t-3 to t-1, where treatment is having a tax cut.

Table A.2: Differences in means for the treatment and control groups for the tax increase sample

	Control	Treatment	Difference/SE
Top 10	40.36	41.20	-0.840
			(0.876)
Top 5	28.66	29.66	-1.002
			(0.932)
Top 1	14.75	15.55	-0.805
			(0.775)
Top 0.5	11.16	11.82	-0.661
			(0.678)
Top 0.1	6.239	6.610	-0.371
			(0.480)
Top 0.01	2.596	2.755	-0.158
			(0.259)
GDP Per Capita	10.15	10.24	-0.0863
			(0.0678)
Population Growth	0.00618	0.00634	-0.000155
			(0.00147)
Share of GDP in Finance	8.309	8.416	-0.107
			(0.1000)
Log Output Gap	0.00870	0.00732	0.00138
			(0.00265)
Government Size	8.108	8.241	-0.133
			(0.0792)
Share of GDP in Military	5.574	5.753	-0.179
			(0.135)
Spillover GDP Per Capita	14.13	14.13	0.00227
			(0.0510)
Unemployment Rate	5.176	4.862	0.314
			(0.262)

NOTES: Table A.2 describes the differences in means for all variables of interest for the treatment and control groups for years t-3 to t-1, where treatment is having a tax increase.

Table A.3: Dynamic analysis of the relation between tax cuts and income inequality

	(1) Top 10	(2) Top 5	(3) Top 1	(4) Top 0.5	(5) Top 0.1	(6) Top 0.01	(7) Top 10	(8) Top 5	(9) Top 1	(10) Top 0.5	(11) Top 0.1	(12) Top 0.01
Year -2	-0.031	0.228	0.135	0.056	0.018	0.007	-0.187	0.090	0.032	-0.063	-0.071	-0.038
	(0.579)	(0.714)	(0.511)	(0.497)	(0.394)	(0.244)	(0.461)	(0.518)	(0.388)	(0.368)	(0.294)	(0.185)
Year -1	-0.075	0.240	0.179	0.149	0.126	0.075	-0.183	0.171	0.069	0.000	0.018	0.019
	(0.429)	(0.535)	(0.382)	(0.367)	(0.282)	(0.170)	(0.305)	(0.369)	(0.276)	(0.246)	(0.198)	(0.126)
Year +1	0.426	0.443	0.443	0.429	0.333	0.178	0.269	0.373	0.370	0.344	0.268	0.146
	(0.386)	(0.421)	(0.352)	(0.303)	(0.232)	(0.135)	(0.350)	(0.383)	(0.324)	(0.262)	(0.204)	(0.125)
Year +2	1.115**	1.003**	0.928**	0.926**	0.639**	0.349**	0.860**	0.854**	0.775**	0.750**	0.504**	0.278**
	(0.458)	(0.490)	(0.424)	(0.393)	(0.286)	(0.165)	(0.397)	(0.404)	(0.342)	(0.295)	(0.215)	(0.132)
Year +3	1.302***	1.150**	1.077**	0.985**	0.792**	0.467**	1.149***	1.066**	0.951**	0.813**	0.663**	0.399**
	(0.452)	(0.478)	(0.424)	(0.379)	(0.302)	(0.187)	(0.415)	(0.426)	(0.375)	(0.320)	(0.258)	(0.165)
GDP Per Capita							13.834	12.154	13.425*	14.779**	11.466**	6.060*
							(9.301)	(9.139)	(7.167)	(5.938)	(4.850)	(3.000)
Population Growth							23.379	23.482	8.060	21.049	14.501	9.531
							(19.588)	(19.593)	(17.452)	(17.650)	(14.788)	(9.500)
Share of GDP in Finance							2.787	4.256	2.621	2.519	1.704	1.133
							(2.738)	(2.891)	(2.323)	(2.526)	(1.794)	(1.069)
Log Output Gap							-16.197*	-10.129	-7.320	-6.811	-5.804	-2.735
							(8.637)	(8.884)	(6.866)	(5.681)	(4.808)	(3.084)
Government Size							7.830**	5.580	6.134**	6.862**	5.045**	2.801**
							(3.727)	(3.595)	(2.647)	(3.158)	(1.863)	(1.025)
Share of GDP in Military							-0.110	0.926	0.019	0.202	0.134	0.108
							(0.810)	(0.855)	(0.573)	(0.609)	(0.442)	(0.274)
Spillover GDP Per Capita							391.333**	239.325	244.325*	372.987***	284.879***	162.109**
							(168.665)	(168.939)	(139.327)	(118.315)	(96.070)	(62.621)
Unemployment Rate							-0.310*	-0.352**	-0.278**	-0.161	-0.133	-0.075
							(0.168)	(0.152)	(0.128)	(0.140)	(0.103)	(0.060)
Observations	300	300	300	300	300	300	300	300	300	300	300	300
Adjusted R^2	0.740	0.769	0.790	0.753	0.732	0.678	0.786	0.828	0.838	0.821	0.801	0.749
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of States	32	32	32	32	32	32	32	32	32	32	32	32

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

NOTES: Table A.3 reports how tax cuts impact income inequality over time by examining year-by-year changes in income inequality around tax cuts using the matched sample. To estimate the overtime effects of tax cuts on income inequality, we create indicator variables for each year around a tax cut. These variables are equal to 1 for the treated state and 0 for the control state. Top X is the percent of income received by the top X%, where X is 10, 5, 1, 0.5, 0.1, or 0.01. p-values are reporter in parentheses. Standard errors are clustered at the state level. All variables are defined in Appendix A

Table A.4: Dynamic analysis of the relation between tax increases and income inequality

	(1) Top 10	(2) Top 5	(3) Top 1	(4) Top 0.5	(5) Top 0.1	(6) Top 0.01	(7) Top 10	(8) Top 5	(9) Top 1	(10) Top 0.5	(11) Top 0.1	(12) Top 0.01
Year -2	0.711	0.468	0.560	0.494	0.308	0.130	0.174	0.114	0.325	0.240	0.119	0.031
	(0.513)	(0.427)	(0.413)	(0.386)	(0.290)	(0.171)	(0.419)	(0.374)	(0.372)	(0.353)	(0.266)	(0.164)
Year -1	0.736	0.515	0.587	0.460	0.296	0.154	0.325	0.190	0.360	0.193	0.094	0.042
	(0.477)	(0.385)	(0.383)	(0.326)	(0.253)	(0.151)	(0.358)	(0.326)	(0.332)	(0.268)	(0.211)	(0.132)
Year +1	0.460	0.501	0.378	0.400	0.335	0.203	-0.266	-0.059	-0.067	-0.116	-0.073	-0.028
	(0.451)	(0.414)	(0.302)	(0.337)	(0.240)	(0.141)	(0.387)	(0.373)	(0.298)	(0.311)	(0.230)	(0.132)
Year +2	0.465	0.460	0.292	0.351	0.338	0.218	-0.064	0.110	0.041	-0.003	0.061	0.065
	(0.415)	(0.354)	(0.270)	(0.291)	(0.229)	(0.143)	(0.424)	(0.378)	(0.310)	(0.311)	(0.246)	(0.147)
Year +3	0.274	0.217	0.133	0.213	0.199	0.112	-0.175	-0.020	-0.003	-0.010	0.028	0.023
	(0.400)	(0.335)	(0.294)	(0.300)	(0.234)	(0.146)	(0.380)	(0.327)	(0.291)	(0.293)	(0.228)	(0.135)
GDP Per Capita							12.220	6.251	7.144	2.233	3.653	2.077
							(8.644)	(6.573)	(5.618)	(5.008)	(4.097)	(2.625)
Population Growth							14.855	5.625	8.865	4.505	-0.837	-1.784
							(27.051)	(23.228)	(21.909)	(20.592)	(16.252)	(10.293)
Share of GDP in Finance							-6.427*	-0.062	-0.642	0.167	-0.085	0.231
							(3.380)	(2.919)	(2.200)	(2.380)	(1.760)	(0.949)
Log Output Gap							14.672	21.216	21.917	26.375	17.937	10.600
							(16.560)	(17.483)	(15.762)	(16.396)	(12.688)	(7.900)
Government Size							-5.282	-5.106	-2.632	-1.064	-1.217	-0.767
							(3.985)	(3.387)	(3.374)	(3.110)	(2.331)	(1.520)
Share of GDP in Military							1.524**	1.822**	0.996*	1.254**	0.954**	0.569*
							(0.650)	(0.669)	(0.514)	(0.518)	(0.447)	(0.304)
Spillover GDP Per Capita							772.818***	564.647***	429.348**	311.121*	239.173*	128.737
							(224.295)	(191.957)	(186.211)	(163.504)	(138.589)	(87.505)
Unemployment Rate							-0.078	0.016	0.058	0.027	0.048	0.043
							(0.114)	(0.099)	(0.103)	(0.092)	(0.081)	(0.054)
Observations	264	264	264	264	264	264	264	264	264	264	264	264
Adjusted R^2	0.508	0.627	0.652	0.588	0.570	0.482	0.598	0.679	0.695	0.649	0.628	0.542
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of States	34	34	34	34	34	34	34	34	34	34	34	34

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

NOTES: Table A.4 reports how tax increases impact income inequality over time by examining year-by-year changes in income inequality around tax increases using the matched sample. To estimate the overtime effects of tax increases on income inequality, we create indicator variables for each year around a tax increase. These variables are equal to 1 for the treated state and 0 for the control state. Top X is the percent of income received by the top X%, where X is 10, 5, 1, 0.5, 0.1, or 0.01. p-values are reporter in parentheses. Standard errors are clustered at the state level. All variables are defined in Appendix A

Table A.5: Dynamic analysis of the relation between tax cuts and alternative measures of income inequality

	(1) Atkinson	(2) Gini	(3) Relative Mean Dev	(4) Theil	(5) Atkinson	(6) Gini	(7) Relative Mean Dev	(8) Theil
Year -2	0.002	-0.002	0.002	0.009	-0.000	-0.003	-0.001	-0.001
	(0.004)	(0.003)	(0.004)	(0.021)	(0.003)	(0.003)	(0.003)	(0.014)
Year -1	0.002	0.001	0.005	0.013	0.001	-0.003	0.001	0.005
	(0.004)	(0.003)	(0.004)	(0.019)	(0.002)	(0.002)	(0.003)	(0.012)
Year +1	0.003	0.006*	0.005	0.016	0.002	0.004*	0.004	0.009
	(0.003)	(0.003)	(0.003)	(0.012)	(0.002)	(0.002)	(0.003)	(0.010)
Year +2	0.004	0.006	0.006	0.023	0.002	0.004	0.005	0.013
	(0.003)	(0.004)	(0.004)	(0.015)	(0.002)	(0.003)	(0.003)	(0.011)
Year +3	0.005*	0.006*	0.006	0.032*	0.004	0.005	0.005	0.023*
	(0.003)	(0.004)	(0.004)	(0.016)	(0.002)	(0.003)	(0.004)	(0.013)
GDP Per Capita					0.117**	0.074	0.211	0.718**
					(0.050)	(0.111)	(0.145)	(0.271)
Population Growth					0.151	-0.597	-0.899*	0.828
					(0.115)	(0.410)	(0.487)	(0.623)
Share of GDP in Finance					0.001	-0.005	-0.034	0.014
					(0.016)	(0.029)	(0.027)	(0.089)
Log Output Gap					-0.133*	0.065	-0.062	-0.678**
					(0.066)	(0.106)	(0.149)	(0.299)
Government Size					0.047**	0.099**	0.078	0.266***
					(0.020)	(0.045)	(0.046)	(0.086)
Share of GDP in Military					0.007	-0.025**	-0.003	0.020
					(0.004)	(0.009)	(0.010)	(0.020)
Spillover GDP Per Capita					1.950**	-3.193*	-1.581	12.116**
					(0.953)	(1.835)	(2.586)	(5.223)
Unemployment Rate					-0.001	-0.001	-0.002	-0.007
					(0.001)	(0.001)	(0.002)	(0.005)
Observations	300	300	300	300	300	300	300	300
Adjusted R^2	0.878	0.570	0.736	0.741	0.920	0.654	0.824	0.826
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of fips	32	32	32	32	32	32	32	32

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

NOTES: Table A.5 reports how tax cuts impact alternative measures of income inequality over time by examining year-by-year changes in income inequality around tax cuts using the matched sample and seemingly unrelated regressions. To estimate the overtime effects of tax cuts on income inequality, we create indicator variables for each year around a tax cut. These variables are equal to 1 for the treated state and 0 for the control state. p-values are reporter in parentheses. Standard errors are clustered at the state level. All variables are defined in Appendix A

Table A.6: Tax increases, government spending, labor market, and industry-level investment

	Government Size		Labor Force Participation		Investment	
	(1)	(2)	(1)	(2)	(1)	(2)
Post X Tax Increase	0.031**	0.031**	-0.161	0.019	-0.162***	-0.117**
	(0.015)	(0.014)	(0.332)	(0.217)	(0.060)	(0.052)
Population Growth		1.881**		34.315		10.511*
		(0.711)		(23.920)		(5.770)
GDP Per Capita				20.338***		2.316
				(5.710)		(2.185)
Share of GDP in Finance				6.100**		0.025
				(2.937)		(0.587)
Log Output Gap				-29.968***		-2.141
				(7.131)		(2.548)
Government Size				2.753*		-1.664**
				(1.587)		(0.806)
Share of GDP in Military				-0.350		-0.121
				(0.368)		(0.189)
Spillover GDP Per Capita				281.342*		7.608
				(164.397)		(51.624)
Unemployment Rate				-0.713***		-0.019
				(0.100)		(0.031)
Observations	264	264	264	264	3346	3346
Adjusted R^2	0.952	0.954	0.591	0.845	0.439	0.445
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
State Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of States	34	34	34	34		
Number of StateXIndustry					560	560

NOTES: Table A.6 reports how tax increases impact other factors that may effect income inequality. Post X Tax Increase is an indicator equal to 1 in years t+1 to t+3 for states that had tax increases, and 0 otherwise. Government Size is government spending per capita. Labor Force Participation is the percent of the working-age population that is employed. Investment is the natural log of total corporate investment, measured at the industry level. p-values are reporter in parentheses. Standard errors are clustered at the state level. All variables are defined in Appendix A

Table A.7: Tax increases and the distribution of labor and capital income

	AGI			Salary			Capital Income			Salary/Capital		
	Bottom	Top	Total	Bottom	Top	Total	Bottom	Top	Total	Bottom	Top	Total
Post X Tax Increase	-0.209	-0.252	-0.207	-0.017	0.013	-0.013	-0.007	0.013	0.007	-0.019	0.039	-0.110
	(0.144)	(0.185)	(0.145)	(0.012)	(0.015)	(0.011)	(0.013)	(0.017)	(0.016)	(0.216)	(0.044)	(0.126)
GDP Per Capita	-5.617	-8.116	-5.465	0.092	-2.395**	-0.115	0.279	1.039	1.287**	-5.742	-7.519***	-9.594**
	(5.050)	(6.919)	(5.205)	(0.394)	(1.020)	(0.355)	(0.493)	(0.634)	(0.519)	(6.029)	(1.842)	(3.753)
Population Growth	3.917	12.638	4.521	-0.799	5.218**	-0.149	-4.706***	4.807	-0.913	53.908	10.309	-5.810
	(11.880)	(15.924)	(12.160)	(1.560)	(2.261)	(1.353)	(1.225)	(3.928)	(2.655)	(39.185)	(14.213)	(29.038)
Share of GDP in Finance	-0.903	-0.863	-0.804	-0.000	0.369	0.103	0.141	0.188	0.170	-0.512	0.530	-0.137
	(0.976)	(1.270)	(1.005)	(0.057)	(0.239)	(0.073)	(0.198)	(0.222)	(0.219)	(2.736)	(0.636)	(1.607)
Log Output Gap	1.498	5.375	2.010	-0.234	6.368***	0.660*	-0.736	0.998	-0.308	12.601	9.097**	10.776**
	(3.852)	(5.734)	(3.997)	(0.453)	(2.114)	(0.358)	(0.762)	(0.943)	(0.899)	(8.693)	(3.230)	(4.804)
Government Size	0.972	1.382	1.025	0.115	0.304	0.207**	0.138	-0.169	-0.056	-1.299	1.436**	0.492
	(0.881)	(1.251)	(0.924)	(0.087)	(0.203)	(0.086)	(0.171)	(0.329)	(0.210)	(3.593)	(0.653)	(2.349)
Share of GDP in Military	0.680	0.951	0.756	-0.037**	0.086	0.027**	-0.038	-0.040	0.044	0.206	0.075	0.540
	(0.625)	(0.841)	(0.637)	(0.015)	(0.070)	(0.012)	(0.059)	(0.061)	(0.062)	(0.875)	(0.163)	(0.411)
Spillover GDP Per Capita	-115.270	-151.687	-105.260	-7.832	-72.520*	-11.558*	27.221**	46.013**	54.857***	-310.428*	-196.706***	-287.545***
	(109.033)	(150.603)	(113.014)	(7.658)	(34.106)	(6.000)	(12.710)	(15.714)	(13.317)	(149.642)	(50.994)	(92.046)
Unemployment Rate	-0.185	-0.225	-0.182	-0.008	0.021	-0.002	-0.008	0.013	0.006	-0.192	-0.062	-0.225
	(0.135)	(0.180)	(0.137)	(0.006)	(0.016)	(0.007)	(0.011)	(0.016)	(0.016)	(0.189)	(0.054)	(0.128)
Observations	108	108	108	108	108	108	108	108	108	108	108	108
Adjusted R^2	0.438	0.456	0.443	0.938	0.919	0.956	0.956	0.962	0.963	0.942	0.946	0.953
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of States	16	16	16	16	16	16	16	16	16	16	16	16

NOTES: Table A.7 reports how tax increases relate to pre-tax income attributable to total individual earnings, capital earnings, and wages. Post X Tax Increase is an indicator equal to 1 in years t+1 to t+3 for states that had tax increases, and 0 otherwise. AGI is the natural log of adjusted gross income. Salary is the natural log of pre-tax income attributable to salaries and wages. Capital income is the natural log of pre-tax income attributable to capital. Salary/Capital is salary income divided by capital income. "Bottom" is the total value of the variable for those making below $200,000. "Top" is the total value of the variable for those making above $200,000. "Total" is the total value of the variable for all income levels. p-values are reporter in parentheses. Standard errors are clustered at the state level. All variables are defined in Appendix A

Table A.8: Tax increase robustness check with seemingly unrelated regressions

	Theil	Gini	Relative Mean Dev	Atkinson	Theil	Gini	Root Mean Dev	Atkinson
Post X Tax Increase	0.014**	-0.004**	-0.000	0.002*	0.011*	-0.005**	-0.001	0.002
	(0.007)	(0.002)	(0.002)	(0.001)	(0.006)	(0.002)	(0.001)	(0.001)
GDP Per Capita					0.060	-0.001	0.009	0.012
					(0.060)	(0.018)	(0.014)	(0.011)
Population Growth					0.055	0.044	-0.140**	-0.014
					(0.276)	(0.083)	(0.067)	(0.052)
Share of GDP in Finance					-0.032	-0.025***	-0.019***	-0.010*
					(0.028)	(0.008)	(0.007)	(0.005)
Log Output Gap					0.090	0.035	-0.002	0.011
					(0.112)	(0.034)	(0.027)	(0.021)
Government Size					-0.043	-0.001	-0.027***	-0.012*
					(0.038)	(0.011)	(0.009)	(0.007)
Share of GDP in Military					0.013**	-0.001	0.004***	0.003***
					(0.006)	(0.002)	(0.001)	(0.001)
Spillover GDP Per Capita					0.034	0.054***	0.073***	0.019***
					(0.039)	(0.012)	(0.009)	(0.007)
Unemployment Rate					-0.004**	0.001	0.000	-0.001**
					(0.002)	(0.001)	(0.000)	(0.000)
Observations	264							
R^2	0.960	0.854	0.972	0.975	0.964	0.863	0.975	0.978
Year Fixed Effects	Yes							
State Fixed Effects	Yes							

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

NOTES: The results reported in Table A.8 use seemingly unrelated regressions to examine how tax increases impact alternative measures of income inequality. Post X Tax Increase is an indicator equal to 1 in years t+1 to t+3 for states that had tax increases, and 0 otherwise. p-values are reporter in parentheses. Standard errors are clustered at the state level. All variables are defined in Appendix A.